

## Supplementary Table S3: Custom library for crucivirus CDS annotation

### Capsid protein

YP_009337040	AQU11782	AKM12421
ABV21601	AQU11784	AQU11734
ABV21605	AQU11784	AQU11745
ABV21600	AQU11778	AQU11727
KX388503.1 - capsid protein translation	AQU11778	AQU11775
KX388519.1 - capsid protein translation	AQR57899	AXH77953
KX388520.1 - capsid protein translation	AQR57899	AXH77252
KX388513.1 - capsid protein translation	ADK55584	AQU11748
KC248412.1 - Capsid protein translation	ADK55584	YP_009337418
KX388525.1 - capsid protein translation	ADK55585	NP_995579
KX388523.1 - capsid protein translation	ADK55585	AHA86933
KX388524.1 - capsid protein translation	ADK55582	AQU11754
KX388526.1 - capsid protein translation	ADK55582	AXH73059
KX388521.1 - capsid protein translation	ADK55583	AQU11730
KX388522.1 - capsid protein translation	ADK55583	AHA86928
KF133808 - Capsid protein translation	YP_009342300	AQU11725
KX388512.1 - capsid protein translation	YP_009342300	YP_009109631
KX388494.1 - capsid protein translation	YP_009336592	AQU11750
KX388496.1 - capsid protein translation	YP_009336592	AQU11706
KX388511.1 - capsid protein translation	YP_009337418	ABV21600
KX388517.1 - capsid protein translation	YP_009337418	ABV21601
KX388518.1 - capsid protein translation	YP_009109631	ADK55583
KX388497.1 - capsid protein translation	YP_009109631	ADK55584
KX388510.1 - capsid protein translation	YP_009337312	ADK55585
KX388509.1 - capsid protein translation	YP_009337312	ABV21605
KX388527.1 - capsid protein translation	AQU11750	ADK55582
KX388528.1 - capsid protein translation	AQU11750	YP_009342300
KX388529.1 - capsid protein translation	AUM61786	YP_009336592
KX388530.1 - capsid protein translation	AUM61786	YP_009337312
KX388507.1 - capsid protein translation	AUM61959	AQU11742
KX388505.1 - capsid protein translation	AUM61959	AQU11763
KX388506.1 - capsid protein translation	AQU11701	AQU11782
KX388500.1 - capsid protein translation	AQU11701	AQU11784
KX388501.1 - capsid protein translation	AQU11708	AQU11778
KX388498.1 - capsid protein translation	AQU11708	AQU11754
KX388499.1 - capsid protein translation	AUM61905	AQU11772
KX388508.1 - capsid protein translation	AUM61905	AXH74708
KX388516.1 - capsid protein translation	AQU11748	AQU11716
KX388502.1 - capsid protein translation	AQU11748	AQU11721
KX388495.1 - capsid protein translation	AQU11763	AQU11708
KX388504.1 - capsid protein translation	AQU11763	YP_009142777
KX388498.1 - capsid protein translation	AQU11713	YP_009342257
KX388515.1 - Capsid protein translation	AQU11745	AQU11739
AQU11754	AQU11745	YP_009337040
KX388514.1 - Capsid protein translation	AQU11742	
YP_009336611	AQU11742	
AHA86933	AQU11790	
AHA86933	AQU11790	
YP_009337040	AXH77579	
YP_009337040	AXH77579	
YP_009342257	AUM61616	
YP_009342257	AUM61616	
ABV21601	AQU11735	
ABV21605	AQU11735	
ABV21600	APG76598	
AHA86933	APG76598	
YP_009337040	AXL65908	
YP_009342257	AXL65908	
YP_009342257	AUF34965	
ABV21601	AUF34965	
ABV21605	AKM12421	
ABV21600	AKM12421	
AHA86933	YP_009094499	
YP_009337040	YP_009094499	
YP_009342257	AQU11732	
YP_009342257	AQU11732	
AQU11790	AQU11734	
AXH74444	AQU11734	
AQR57899	AXH77953	
BAF37070	AXH77953	
AXH74994	AUM61901	
AQU11760	AUM61901	
AXH74298	AXH76175	
AUF34965	AXH76175	
AQU11721	AQU11721	
AQU11716	AQU11721	
AQU11732	AQU11716	
AQU11735	AIF34804	
AQU11713	AIF34804	
AHA86933	YP_009142777	
YP_009342257	YP_009142777	
NP_995579	AQU11739	
NP_995579	AQU11739	
AQU11727	AXH74298	
AQU11727	AXH74298	
BAF37070	AXH74708	
BAF37070	AXH74708	
AXH77252	YP_009336686	
AXH77252	YP_009336686	
AXH74444	AQU11760	
AXH74444	AQU11760	
YP_009237532	AYF34965	
YP_009237532	AYF34965	
AQU11772	YP_009342257	
AQU11772	YP_009342257	
AQU11775	AHA86928	
AQU11775	AHA86928	
YP_009337040	AOV86262	
YP_009337040	AOV86262	
AXH74994	AQU11725	
AXH74994	AQU11725	
AHA86933	AQU11706	
AHA86933	AQU11706	
YP_009252339	AQU11730	
YP_009252339	AQU11730	
AXH73059	AXH76175	
AXH73059	YP_009094499	
YP_009336611	YP_009336686	
YP_009336611	AQU11701	
AQU11782	YP_009237532	
	AIF34804	

## Rep

KP005453 (modified) - Replication associated protein  
 interval 2 translation - Replication associated protein  
 KP005454 (modified) - Replication associated protein  
 interval 2 translation - Replication associated protein  
 KT149398 (modified) - hypothetical protein CDS  
 translation - hypothetical protein CDS  
 KT149398 (modified) - hypothetical protein CDS  
 translation 3 - hypothetical protein CDS  
 KT149398 (modified) - hypothetical protein CDS  
 translation 3 - hypothetical protein CDS  
 KX618694 - TrAP translation - Ren  
 KT149408 (modified) - hypothetical protein CDS  
 translation 2 - hypothetical protein CDS  
 KT149408 (modified) - Replication associated protein  
 translation - hypothetical protein CDS  
 KT149408 (modified) - hypothetical protein CDS  
 translation 2 - Replication associated protein  
 MH425572.1 - Replication associated protein interval 2  
 translation - Replication associated protein  
 U49907 (modified) - Replication-associated protein  
 translation - C2 CDS  
 KX618694 - Replication associated protein translation -  
 TrAP  
 YP\_009021245 - Viral Rep  
 YP\_009021245 - Viral Rep  
 KT149395 (modified) - hypothetical protein CDS  
 translation 2 - hypothetical protein CDS  
 KT149395 (modified) - Replication associated protein  
 translation - hypothetical protein CDS  
 KT149395 (modified) - hypothetical protein CDS  
 translation 2 - Replication associated protein  
 AOV86234 - Viral Rep  
 AOV86234 - Viral Rep  
 AXH73056 - Viral Rep  
 AXH73056 - Viral Rep  
 YP\_009109643 - Viral Rep  
 YP\_009109643 - Viral Rep  
 ARI44308 - Viral Rep  
 ARI44308 - Viral Rep  
 AHH31400 - Viral Rep  
 AHH31400 - Viral Rep  
 AEL28791 - Viral Rep  
 AEL28791 - Viral Rep  
 YP\_764455 - Viral Rep  
 YP\_764455 - Viral Rep  
 KC248420 (modified) - Replication associated protein  
 translation - hypothetical protein CDS  
 KY487822.1 - Replication associated protein translation -  
 Replication associated protein  
 AIF34812 - Gemini AL1 M  
 AIF34812 - Gemini AL1 M  
 KT945154 (modified) - Hypothetical 2 translation -  
 hypothetical protein CDS  
 KT945154 (modified) - Replication associated protein  
 translation - Hypothetical 2  
 MG748718.1 - Replication associated protein translation -  
 hypothetical protein CDS  
 MG748719.1 - Replication associated protein translation -  
 hypothetical protein CDS  
 MG748720.1 - Replication associated protein translation -  
 hypothetical protein CDS  
 MG748718.1 - Replication associated protein translation -  
 Replication associated protein  
 MG748719.1 - Replication associated protein translation -  
 Replication associated protein  
 MG748720.1 - Replication associated protein translation -  
 Replication associated protein  
 MG748715.1 - Replication associated protein translation -  
 hypothetical protein CDS  
 MG748715.1 - Replication associated protein translation -  
 Replication associated protein  
 MG748716.1 - Replication associated protein translation -  
 hypothetical protein CDS  
 MG748716.1 - Replication associated protein translation -  
 Replication associated protein  
 MG748717.1 - Replication associated protein translation -  
 hypothetical protein CDS  
 MG748717.1 - Replication associated protein translation -  
 Replication associated protein  
 KT149403 (modified) - hypothetical protein CDS  
 translation 2 - hypothetical protein CDS  
 KT149403 (modified) - Replication associated protein  
 translation - hypothetical protein CDS  
 KT149403 (modified) - hypothetical protein CDS  
 translation 2 - Replication associated protein  
 AUF34964 - CDS  
 AUF34964 - putative replication-associated protein  
 AUF34964 - Viral Rep  
 AUF34964 - Viral Rep  
 AUF34964 - Viral Rep  
 YP\_009116902 - Viral Rep  
 YP\_009116902 - Viral Rep  
 AEL28793 - Viral Rep  
 AEL28793 - Viral Rep  
 AWW06057 - Viral Rep  
 AWW06057 - Viral Rep  
 KJ437671 (modified) - Replication-associated protein  
 interval 2 translation - RepA CDS  
 KJ437671 (modified) - Replication-associated protein  
 interval 2 translation - Replication-associated protein  
 ALE29827 - Viral Rep  
 ALE29827 - Viral Rep  
 AMD39533 - Viral Rep  
 AMD39533 - Viral Rep  
 AVX29443 - Viral Rep  
 AVX29443 - Viral Rep  
 AXH74443 - Viral Rep  
 AXH74443 - Viral Rep  
 AGA18441 - Viral Rep  
 AGA18441 - Viral Rep

C2248414 (modified) - Replication associated protein translation - ORF 2 (frame 1)  
 AIF76259 - Viral Rep  
 AIF76259 - Viral Rep  
 KT214386 (modified) - Replication-associated protein interval 1 translation - C3 CDS  
 KT214386 (modified) - C3 CDS translation - Replication-associated protein  
 KT214386 (modified) - C3 CDS translation - C3 CDS  
 KT214386 (modified) - RepA CDS translation - C3 CDS  
 KT214386 (modified) - C3 CDS translation - RepA CDS  
 YP\_009163920 - Viral Rep  
 YP\_009163920 - Viral Rep  
 AIF34802 - Viral Rep  
 AIF34802 - Viral Rep  
 GU734126 (modified) - Replication-associated protein translation - C2 CDS  
 KM386645 (modified) - Replication-associated protein translation - TrAP  
 AIF76277 - Viral Rep  
 AIF76277 - Viral Rep  
 KP153500 (modified) - Hypothetical 1 translation - Hypothetical 1  
 KP153500 (modified) - Hypothetical 2 translation - Hypothetical 1  
 KP153500 (modified) - Hypothetical 1 translation - Hypothetical 2  
 KP133827 - hypothetical protein CDS translation - hypothetical protein CDS  
 KT149401 (modified) - hypothetical protein CDS translation 2 - Replication associated protein  
 YP\_009126898 - Viral Rep  
 YP\_009126898 - Viral Rep  
 AGA18265 - Viral Rep  
 AGA18265 - Viral Rep  
 AIX11626 - Viral Rep  
 AIX11626 - Viral Rep  
 AUW34331 - Viral Rep  
 AUW34331 - Viral Rep  
 YP\_009109675 - Viral Rep  
 YP\_009109675 - Viral Rep  
 KU203351 (modified) - ORF 6 (frame 3) translation - ORF 7 (frame 2)  
 AF379637 (modified) - L4 CDS translation - Replication-associated protein  
 MH545516.1 - Replication associated protein interval 2 translation - Replication associated protein  
 AGG39817 - Viral Rep  
 AGG39817 - Viral Rep  
 AJM89742 - Viral Rep  
 AJM89742 - Viral Rep  
 WP\_027090230 - other interval 2  
 WP\_027090230 - other interval 2  
 WP\_027090230 - other interval 2  
 WP\_027090230 - other interval 2  
 WP\_027090230 - other interval 2  
 YP\_009237578 - other interval 2  
 YP\_009237578 - other interval 2  
 YP\_009237578 - other interval 2  
 YP\_009237578 - other interval 2  
 KY487791.1 - Replication associated protein translation - Replication associated protein  
 KT149398 (modified) - hypothetical protein CDS translation 2 - hypothetical protein CDS  
 KT149398 (modified) - Replication associated protein translation - hypothetical protein CDS  
 KT149398 (modified) - hypothetical protein CDS translation 2 - Replication associated protein  
 KT149396 (modified) - hypothetical protein CDS translation 2 - hypothetical protein CDS  
 KT149396 (modified) - Replication associated protein translation - hypothetical protein CDS  
 KT149396 (modified) - hypothetical protein CDS translation 2 - Replication associated protein  
 KR134313 (modified) - RNA-binding protein CDS translation - Replication associated protein  
 KR134313 (modified) - Replication associated protein translation - RNA-binding protein CDS  
 KR134313 (modified) - RNA-binding protein CDS translation - RNA-binding protein CDS  
 KT149404 (modified) - hypothetical protein CDS translation 2 - hypothetical protein CDS  
 KT149404 (modified) - Replication associated protein translation - hypothetical protein CDS  
 KT149404 (modified) - hypothetical protein CDS translation 2 - Replication associated protein  
 YP\_009126881 - CDS  
 YP\_009126881 - replication-associated protein  
 YP\_009126881 - Viral Rep  
 YP\_009126881 - Viral Rep  
 YP\_009126881 - Viral Rep  
 KT214389 (modified) - Replication-associated protein interval 2 translation - RepA CDS  
 KT214389 (modified) - Replication-associated protein interval 2 translation - Replication-associated protein  
 KT214389 (modified) - Replication-associated protein interval 1 translation - C3 CDS  
 KT214389 (modified) - C3 CDS translation - Replication-associated protein  
 KT214389 (modified) - C3 CDS translation - C3 CDS  
 KT214389 (modified) - RepA CDS translation - C3 CDS  
 KT214389 (modified) - C3 CDS translation - RepA CDS  
 KX388527.1 - Replication associated protein translation - Replication associated protein  
 KX388527.1 - Replication associated protein translation - stem loop  
 KX388527.1 - Replication associated protein translation - stem loop  
 KJ955447 (modified) - viral RNA-binding protein CDS translation - Replication associated protein  
 KJ955448 (modified) - viral RNA-binding protein CDS translation - Replication associated protein

[illegible]



AAK73450 - Gemini AL1  
FJ959079 (modified) - Capsid protein translation - stem loop  
FJ959079 (modified) - Capsid protein translation - stem loop  
AXH78100 - Viral Rep  
AXH78100 - Viral Rep  
AJD07498 - Viral Rep  
AJD07498 - Viral Rep  
AXH73056 - P-loop NTPase  
AXH73056 - P-loop NTPase  
ARE68406 - CDS  
ARE68406 - replication associated protein  
KY487865.1 - Replication associated protein translation - Replication associated protein  
KR528547 (modified) - Replication associated protein interval 2 translation - Replication associated protein  
KT388086 (modified) - TrAP translation - Ren  
KT388088 (modified) - TrAP translation - Ren  
YP\_009237554 - Gemini AL1 M  
KY487886.1 - Replication associated protein translation - Replication associated protein  
JX559642 (modified) - Replication-associated protein interval 1 translation - 17.9 kDa protein CDS  
KF147918 (modified) - Replication-associated protein interval 1 translation - ORF 5 (frame 3)  
KF147918 (modified) - Replication-associated protein interval 1 translation - ORF 5 (frame 3)  
KF147918 (modified) - Replication-associated protein interval 1 translation - Replication-associated protein  
X84735 (modified) - ORF C4 CDS translation - ORF C4 CDS  
X84735 (modified) - Replication-associated protein translation - ORF C4 CDS  
X84735 (modified) - ORF C4 CDS translation - Replication-associated protein  
GU456685 (modified) - C4 CDS translation - C4 CDS  
GU456685 (modified) - Replication-associated protein translation - C4 CDS  
GU456685 (modified) - C4 CDS translation - Replication-associated protein  
KC108902 (modified) - C4 CDS translation - C4 CDS  
KC108902 (modified) - Replication-associated protein translation - C4 CDS  
KC108902 (modified) - C4 CDS translation - Replication-associated protein  
KT388086 (modified) - C4 CDS translation - C4 CDS  
KT388086 (modified) - Replication-associated protein translation - C4 CDS  
KT388086 (modified) - C4 CDS translation - Replication-associated protein  
KM386645 (modified) - C4 CDS translation - C4 CDS  
KM386645 (modified) - Replication-associated protein translation - C4 CDS  
KM386645 (modified) - C4 CDS translation - Replication-associated protein  
YP\_009237554 - Gemini AL1 M  
YP\_009237554 - Gemini AL1 M  
AWR89667 - CDS  
AWR89667 - replication initiation protein  
AWR89667 - Viral Rep  
AWR89667 - Viral Rep  
AWR89667 - Viral Rep  
KM386645 (modified) - TrAP translation - Ren  
X84735 (modified) - TrAP translation - Ren  
KT214386 (modified) - V2 CDS translation - V4 CDS  
AF379637 (modified) - Replication-associated protein translation - TrAP  
KT945165 (modified) - Replication associated protein interval 2 translation - Replication associated protein  
KT945165 (modified) - Replication associated protein interval 2 translation - stem loop  
KT945165 (modified) - Replication associated protein interval 2 translation - stem loop  
KT945165 (modified) - Replication associated protein interval 2 translation - Replication associated protein  
KT214373 (modified) - V4 CDS translation - V3 CDS  
KT214386 (modified) - V4 CDS translation - V3 CDS  
KT214389 (modified) - V4 CDS translation - V3 CDS  
KT149408 (modified) - hypothetical protein CDS translation - hypothetical protein CDS  
KT149408 (modified) - hypothetical protein CDS translation 3 - hypothetical protein CDS  
KT149408 (modified) - hypothetical protein CDS translation 3 - hypothetical protein CDS  
AMD39533 - Walker A/P-loop  
AMD39533 - Walker A/P-loop  
AMD39533 - Walker A/P-loop  
AMD39533 - Walker A/P-loop  
AMD39533 - Walker A/P-loop  
AMD39533 - Walker A/P-loop  
AMD39533 - Walker A/P-loop  
AMD39533 - Walker A/P-loop  
AIF76255 - Walker A/P-loop  
AIF76255 - Walker A/P-loop  
AIF76255 - Walker A/P-loop  
YP\_009237578 - Walker A motif  
YP\_009237578 - Walker A motif  
YP\_009237578 - Walker A motif  
WP\_027090230 - Walker A motif  
WP\_027090230 - Walker A motif  
WP\_027090230 - Walker A motif  
WP\_027090230 - Walker A motif  
WP\_027090230 - Walker A motif  
WP\_027090230 - Walker A motif  
XK618694 - HAP/C4 CDS translation - HAP/C4 CDS  
XK618694 - Replication associated protein translation - HAP/C4 CDS  
XK618694 - HAP/C4 CDS translation - Replication associated protein  
KT149405 (modified) - hypothetical protein CDS translation 2 - hypothetical protein CDS  
KT149405 (modified) - Replication associated protein translation - hypothetical protein CDS  
KT149405 (modified) - hypothetical protein CDS translation 2 - Replication associated protein  
AGA19549 - Gemini AL1 M  
AGA19549 - Gemini AL1 M  
JF755410 (modified) - ORF 3 (frame 2) translation - ORF 4 (frame 3)  
MH545525.1 - Replication associated protein translation - Replication associated protein  
MH545525.1 - Replication associated protein translation - stem loop  
MH545525.1 - Replication associated protein translation - stem loop  
AKR53286 - P-loop NTPase  
AKR53286 - P-loop NTPase  
KC248418 (modified) - Replication associated protein translation - hypothetical protein CDS  
U49907 (modified) - V3 CDS translation - V2 CDS  
KP410285 (modified) - V3 CDS translation - V2 CDS  
EU921828 (modified) - V3 CDS translation - V2 CDS  
AF379637 (modified) - V3 translation - V2  
HQ443515 (modified) - V3 CDS translation - V2 CDS  
GU734126 (modified) - V3 CDS translation - V2 CDS  
EU921828 (modified) - C4 CDS translation - C4 CDS  
EU921828 (modified) - Replication-associated protein translation - C4 CDS  
EU921828 (modified) - C4 CDS translation - Replication-associated protein  
X84735 (modified) - Replication-associated protein translation - TrAP  
KF147918 (modified) - Capsid protein translation - ORF 3 (frame 1)  
KF147918 (modified) - Capsid protein translation - ORF 3 (frame 1)  
JX559642 (modified) - Capsid protein translation - 14.7 kDa protein CDS  
KX388507.1 - Replication associated protein translation - stem loop  
KT214373 (modified) - Replication-associated protein interval 1 translation - C3 CDS  
KT214373 (modified) - C3 CDS translation - Replication-associated protein  
KT214373 (modified) - C3 CDS translation - C3 CDS  
KT214373 (modified) - RepA CDS translation - C3 CDS  
KT214373 (modified) - C3 CDS translation - RepA CDS  
JX559621 (modified) - hypothetical protein CDS translation 2 - stem loop  
JX559622 (modified) - hypothetical protein CDS translation 2 - stem loop  
KU043397.1 - Replication associated protein translation - Replication associated protein  
KJ206566 (modified) - Replication associated protein translation - hypothetical protein CDS  
AJD20393 - Gemini AL1  
AJD20393 - Gemini AL1  
KT33820 - Replication associated protein interval 2 translation - Replication associated protein  
KU043420.1 - Hypothetical protein translation - Hypothetical protein  
Y00514 (modified) - RepA translation - Replication-associated protein interval 2  
JF755415 (modified) - Replication associated protein interval 2 translation - Replication associated protein  
MH617545.1 - Replication associated protein translation - hypothetical protein CDS  
MH617545.1 - Replication associated protein translation - Replication associated protein  
JN857329 (modified) - Capsid protein translation - Replication associated protein  
AVH76405 - CDS  
AVH76405 - Parvo NS1  
AVH76405 - putative Rep Protein  
AVH76405 - Parvo NS1  
AVH76405 - Parvo NS1  
KT732819 (modified) - Capsid protein translation - Replication associated protein  
KF133827 - hypothetical protein CDS translation 2 - hypothetical protein CDS  
KR528567 (modified) - Replication associated protein translation - Replication associated protein  
AGG39817 - P-loop NTPase  
AGG39817 - P-loop NTPase  
WP\_027090230 - P-loop NTPase  
WP\_027090230 - P-loop NTPase  
WP\_027090230 - Walker B motif  
WP\_027090230 - Walker B motif  
WP\_027090230 - Walker B motif  
WP\_027090230 - Walker B motif  
AQR57902 - RNA helicase  
AQR57902 - RNA helicase  
AQR57902 - RNA helicase  
AXH73290 - P-loop NTPase  
AXH73290 - P-loop NTPase  
YP\_009126892 - CDS  
YP\_009126892 - replication-associated protein  
YP\_009126892 - Viral Rep  
YP\_009126892 - Viral Rep  
YP\_009126892 - Viral Rep  
FJ959079 (modified) - Replication associated protein interval 2 translation - Replication associated protein  
FJ959079 (modified) - Replication associated protein interval 2 translation - Replication associated protein  
FJ959079 (modified) - Replication associated protein interval 2 translation - stem loop  
FJ959079 (modified) - Replication associated protein interval 2 translation - stem loop  
YP\_009237541 - P-loop NTPase  
YP\_009237541 - P-loop NTPase  
YP\_009237541 - P-loop NTPase  
AUF34964 - P-loop NTPase  
AUF34964 - P-loop NTPase  
KF738881 (modified) - Capsid protein translation - Replication associated protein  
YP\_009126892 - RNA helicase  
YP\_009126892 - RNA helicase  
KM821767 (modified) - Replication associated protein interval 2 translation - Replication associated protein  
FJ959083 (modified) - hypothetical protein CDS translation - Replication associated protein  
AF071878 (modified) - Replication associated protein translation - Replication associated protein  
AF071878 (modified) - Replication associated protein translation - Replication associated protein  
KR134311 (modified) - viral protein RNase Z CDS translation - Replication associated protein  
KR134312 (modified) - viral protein RNase Z CDS translation - Replication associated protein  
KR134321 (modified) - viral protein RNase Z CDS translation - Replication associated protein  
KR134322 (modified) - viral protein RNase Z CDS translation - Replication associated protein  
KR134311 (modified) - Replication associated protein translation - Replication associated protein  
KR134312 (modified) - viral protein RNase Z CDS translation - Replication associated protein  
KR134321 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
KR134322 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
AQU11729 - P-loop NTPase  
AQU11729 - P-loop NTPase  
AHH31400 - RNA helicase  
AHH31400 - RNA helicase  
ARI44308 - RNA helicase  
ARI44308 - RNA helicase  
AMD39533 - RNA helicase  
AMD39533 - RNA helicase  
AMD39533 - RNA helicase  
AUT13975 - RNA helicase  
AUT13975 - RNA helicase  
YP\_009170674 - RNA helicase  
YP\_009170674 - RNA helicase  
YP\_009237578 - RNA helicase  
YP\_009237578 - RNA helicase  
YP\_764455 - RNA helicase  
YP\_764455 - RNA helicase  
YP\_764455 - RNA helicase  
AGA18409 - P-loop NTPase  
AGA18409 - P-loop NTPase  
ARE67375 - RNA helicase  
ARE67375 - RNA helicase  
NP\_955176 - RNA helicase  
NP\_955176 - RNA helicase  
AEL28813 - RNA helicase  
AEL28813 - RNA helicase  
AFH02742 - P-loop NTPase  
AFH02742 - P-loop NTPase  
AQU11733 - P-loop NTPase  
AQU11733 - P-loop NTPase  
AIF76255 - P-loop NTPase  
AIF76255 - P-loop NTPase  
AXH77121 - RNA helicase  
AXH77121 - RNA helicase  
AJP36430 - RNA helicase  
AJP36430 - RNA helicase  
YP\_009126938 - P-loop NTPase  
YP\_009126938 - P-loop NTPase  
AXG50856 - P-loop NTPase  
AXG50856 - P-loop NTPase  
NP\_619761 - RNA helicase  
NP\_619761 - RNA helicase  
AKO71368 - RNA helicase  
AKO71368 - RNA helicase  
ALA65733 - RNA helicase  
ALA65733 - RNA helicase  
AHC72271 - RNA helicase  
AHC72271 - RNA helicase  
YP\_008997794 - RNA helicase  
YP\_008997794 - RNA helicase  
AHC72177 - RNA helicase  
AHC72177 - RNA helicase  
AHC72167 - P-loop NTPase  
AHC72167 - P-loop NTPase  
CBK25810 - RNA helicase  
CBK25810 - RNA helicase  
ATY70087 - RNA helicase  
ATY70087 - RNA helicase  
ADC79191 - RNA helicase  
ADC79191 - RNA helicase  
ADC79191 - RNA helicase  
AGA18391 - P-loop NTPase  
AGA18391 - P-loop NTPase  
AWR89667 - P-loop NTPase  
AWR89667 - P-loop NTPase  
AQU11717 - P-loop NTPase  
AQU11717 - P-loop NTPase  
AQU11724 - P-loop NTPase  
AEL87784 - P-loop NTPase  
AEL87784 - P-loop NTPase  
KU043415.1 - Replication associated protein translation - Replication associated protein  
YP\_009109660 - replication-associated protein  
YP\_009109660 - start codon not determined CDS  
KF133817 - Replication associated protein translation - Replication associated protein  
KX388528.1 - hypothetical protein CDS translation - stem loop  
KF133813 - Replication associated protein interval 2 translation - Replication associated protein  
AQR57902 - Rep CDS  
AQR57902 - replicase Protein  
AQR57902 - TIP49  
AQR57902 - TIP49  
AQR57902 - TIP49  
KR528564 (modified) - Replication associated protein interval 2 translation - Replication associated protein



















KT214373 (modified) - RepA CDS translation - Replication-associated protein interval 2  
 MH545530.1 - Replication associated protein interval 1 translation - Replication associated protein  
 MH545530.1 - Replication associated protein interval 1 translation - stem loop  
 MH545530.1 - Replication associated protein interval 1 translation - stem loop  
 KF738878 (modified) - Replication associated protein interval 2 translation - Replication associated protein  
 KF738879 (modified) - Replication associated protein interval 2 translation - Replication associated protein  
 FJ959086 (modified) - Replication associated protein translation - Replication associated protein  
 FJ959086 (modified) - Replication associated protein translation - stem loop  
 FJ959086 (modified) - Replication associated protein translation - stem loop  
 KM598411 (modified) - Replication associated protein interval 2 translation - Replication associated protein  
 KR528558 (modified) - Replication associated protein interval 2 translation - Replication associated protein  
 KT214389 (modified) - RepA CDS translation - Replication-associated protein interval 2  
 KM821748 (modified) - Replication associated protein interval 2 translation - Replication associated protein  
 KR528558 (modified) - Replication associated protein interval 2 translation - contains nonanucleotide motif stem loop  
 KR528558 (modified) - Replication associated protein interval 2 translation - contains nonanucleotide motif stem loop  
 KR528558 (modified) - Replication associated protein interval 2 translation - contains nonanucleotide motif stem loop  
 YP\_009237578 - other interval 1  
 YP\_009237578 - other interval 1  
 YP\_009237578 - other interval 1  
 YP\_009237578 - other interval 1  
 WP\_027090230 - other interval 1  
 WP\_027090230 - other interval 1  
 WP\_027090230 - other interval 1  
 WP\_027090230 - other interval 1  
 WP\_027090230 - other interval 1  
 WP\_027090230 - other interval 1  
 JX094280 (modified) - Replication-associated protein interval 2 translation - Replication-associated protein  
 KM598400 (modified) - Replication associated protein interval 2 translation - Replication associated protein  
 KT388086 (modified) - Capsid protein translation - Ren  
 KM821757 (modified) - Capsid protein translation - Replication associated protein  
 AXH73061 - CDS  
 AXH73061 - putative viral replication protein  
 AXH73061 - TIP49  
 AXH73061 - TIP49  
 AXH73061 - TIP49  
 KJ437671 (modified) - RepA CDS translation - Replication-associated protein interval 2  
 AQU11746 - CDS  
 AQU11746 - replication protein  
 AQU11746 - Viral Rep  
 AQU11746 - Viral Rep  
 AQU11746 - Viral Rep  
 KF133823 - Replication associated protein interval 2 translation - Replication associated protein  
 MH545540.1 - Replication associated protein interval 2 translation - Replication associated protein  
 YP\_009237554 - Gemini AL1  
 YP\_009237554 - Gemini AL1  
 YP\_009109660 - replication-associated protein  
 YP\_009109660 - start codon not determined CDS  
 YP\_009109660 - Viral Rep  
 YP\_009109660 - Viral Rep  
 YP\_009109660 - Viral Rep  
 WP\_027090230 - arginine finger  
 WP\_027090230 - arginine finger  
 WP\_027090230 - arginine finger  
 WP\_027090230 - arginine finger  
 MH617615.1 - Replication associated protein translation - hypothetical protein CDS  
 MH617615.1 - Replication associated protein translation - Replication associated protein  
 AIF34798 - Viral Rep  
 AIF34798 - Viral Rep  
 AGA18393 - Viral Rep  
 AGA18393 - Viral Rep  
 AXH76451 - Viral Rep  
 AXH76451 - Viral Rep  
 YP\_009226567 - Viral Rep  
 YP\_009226567 - Viral Rep  
 AQU11736 - Viral Rep  
 AQU11736 - Viral Rep  
 KX388516.1 - Replication associated protein interval 2 translation - Replication associated protein  
 AGA18448 - Viral Rep  
 AGA18448 - Viral Rep  
 AQU11717 - Viral Rep  
 AQU11717 - Viral Rep  
 AQU11724 - Viral Rep  
 AQU11724 - Viral Rep  
 AXH76508 - Viral Rep  
 AXH76508 - Viral Rep  
 KM874350 (modified) - Replication associated protein interval 2 translation - Replication associated protein  
 AIF34812 - Gemini AL1  
 AIF34812 - Gemini AL1  
 AJP36430 - Viral Rep  
 AJP36430 - Viral Rep  
 AQU11726 - Viral Rep  
 AQU11726 - Viral Rep  
 YP\_009237541 - AAA  
 YP\_009237541 - AAA  
 YP\_009448204 - Viral Rep  
 YP\_009448204 - Viral Rep  
 YP\_009126925 - Viral Rep  
 YP\_009126925 - Viral Rep  
 YP\_009115538 - Viral Rep  
 YP\_009115538 - Viral Rep  
 AGA18286 - Viral Rep  
 AGA18286 - Viral Rep  
 KJ547626 (modified) - Replication associated protein interval 2 translation - Replication associated protein  
 KP153394 (modified) - Replication associated protein interval 2 translation - Replication associated protein  
 YP\_009237541 - Viral Rep  
 YP\_009237541 - Viral Rep  
 KY487837.1 - Replication associated protein translation - Replication associated protein  
 AKO84203 - Viral Rep  
 AKO84203 - Viral Rep  
 YP\_009170674 - Viral Rep  
 YP\_009170674 - Viral Rep  
 ADY62649 - Viral Rep  
 ADY62649 - Viral Rep  
 AHB63242 - Viral Rep  
 AHB63242 - Viral Rep  
 YP\_009126938 - Viral Rep  
 YP\_009126938 - Viral Rep  
 AXH76879 - Viral Rep  
 AXH76879 - Viral Rep  
 AIF76269 - Viral Rep  
 AIF76269 - Viral Rep  
 KF133815 - hypothetical protein CDS interval 2 translation - hypothetical protein CDS  
 KF133815 - hypothetical protein CDS interval 2 translation - stem loop  
 KF133815 - hypothetical protein CDS interval 2 translation - stem loop  
 KF133815 - hypothetical protein CDS interval 2 translation - hypothetical protein CDS  
 AXH77740 - Viral Rep  
 AXH77740 - Viral Rep  
 AVA16977 - Viral Rep  
 AVA16977 - Viral Rep  
 AVV68420 - Viral Rep  
 AVV68420 - Viral Rep  
 AVA17000 - Viral Rep  
 AVA17000 - Viral Rep  
 AVA16996 - Viral Rep  
 AVA16996 - Viral Rep  
 ATD53351 - Viral Rep  
 ATD53351 - Viral Rep  
 AVA16998 - Viral Rep  
 AVA16998 - Viral Rep  
 AWB80902 - Viral Rep  
 AWB80902 - Viral Rep  
 YP\_008052687 - Viral Rep  
 YP\_008052687 - Viral Rep  
 ADC79191 - Viral Rep  
 ADC79191 - Viral Rep  
 YP\_009021888 - Viral Rep  
 YP\_009021888 - Viral Rep  
 AUT13975 - Viral Rep  
 AUT13975 - Viral Rep  
 ACE62799 - Viral Rep  
 ACE62799 - Viral Rep  
 AIW81537 - Viral Rep  
 AIW81537 - Viral Rep  
 KR528560 (modified) - Replication associated protein interval 2 translation - Replication associated protein  
 MH378453.1 - Capsid protein translation - Replication associated protein  
 KT732784 (modified) - Capsid protein translation - hypothetical protein CDS  
 KJ955447 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KJ955448 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KJ955449 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KJ955450 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KJ955451 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134313 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134314 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134315 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134316 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134317 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134318 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134319 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134320 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134323 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134324 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134325 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134326 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134327 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134328 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134329 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134330 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134331 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134332 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134333 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134334 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134335 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134336 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134337 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134338 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134339 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134340 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134341 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134342 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134343 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134344 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134345 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134346 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134347 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134348 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134349 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR134350 (modified) - Replication associated protein translation - viral protein RNase Z CDS  
 KR528549 (modified) - Capsid protein translation - Replication associated protein  
 EF536860 (modified) - RepA translation - Replication-associated protein interval 2  
 KJ547653 (modified) - hypothetical protein CDS translation - hypothetical protein CDS  
 AEL22996 - Viral Rep  
 AEL22996 - Viral Rep  
 YP\_004778177 - Viral Rep  
 YP\_004778177 - Viral Rep  
 AXH73508 - Viral Rep  
 AXH73508 - Viral Rep  
 JQ920490 (modified) - Replication-associated protein interval 2 translation - Replication-associated protein  
 AXH75487 - Viral Rep  
 AXH75487 - Viral Rep  
 AXH76667 - Viral Rep  
 AXH76667 - Viral Rep  
 AQU11728 - Viral Rep  
 AQU11728 - Viral Rep  
 KM821749 (modified) - Replication associated protein interval 2 translation - Replication associated protein  
 HQ443515 (modified) - Replication-associated protein interval 2 translation - Replication-associated protein  
 KR131749 (modified) - putative RepA-like protein CDS translation - Replication-associated protein interval 2  
 KU043398.1 - Replication associated protein translation - Replication associated protein  
 AXH74936 - Viral Rep  
 AXH74936 - Viral Rep  
 ARO38300 - Viral Rep  
 ARO38300 - Viral Rep  
 YP\_009116906 - Viral Rep  
 YP\_009116906 - Viral Rep  
 AXH73393 - Viral Rep  
 AXH73393 - Viral Rep  
 AXH76040 - Viral Rep  
 AXH76040 - Viral Rep  
 AIF76255 - Viral Rep  
 AIF76255 - Viral Rep  
 YP\_009237516 - Viral Rep  
 YP\_009237516 - Viral Rep  
 ALE29847 - Viral Rep  
 ALE29847 - Viral Rep  
 YP\_009001747 - Viral Rep  
 YP\_009001747 - Viral Rep  
 YP\_009237564 - Viral Rep  
 YP\_009237564 - Viral Rep  
 AJO07478 - Viral Rep  
 AJO07478 - Viral Rep  
 ALE29688 - Viral Rep  
 ALE29688 - Viral Rep  
 YP\_009001742 - Viral Rep  
 YP\_009001742 - Viral Rep  
 YP\_009237586 - Viral Rep  
 YP\_009237586 - Viral Rep  
 AMH87735 - Viral Rep  
 AMH87735 - Viral Rep  
 AXH73382 - Viral Rep  
 AXH73382 - Viral Rep  
 KF133823 - hypothetical protein CDS translation 2 - hypothetical protein CDS  
 ARE67375 - Viral Rep  
 ARE67375 - Viral Rep  
 NP\_955176 - Viral Rep  
 NP\_955176 - Viral Rep  
 AKR53286 - Viral Rep  
 AKR53286 - Viral Rep  
 AGA18388 - Viral Rep  
 AGA18388 - Viral Rep  
 YP\_009126890 - Viral Rep  
 YP\_009126890 - Viral Rep  
 AGA18473 - Viral Rep

AGA18473 - Viral Rep  
 AGS47835 - Viral Rep  
 AGS47835 - Viral Rep  
 YP\_009109670 - Viral Rep  
 YP\_009109670 - Viral Rep  
 AQR57898 - Viral Rep  
 AQR57898 - Viral Rep  
 AGA18245 - Viral Rep  
 AGA18245 - Viral Rep  
 AQR57902 - Viral Rep  
 AQR57902 - Viral Rep  
 AXH73061 - Viral Rep  
 AXH73061 - Viral Rep  
 Y00514 (modified) - Replication-associated protein interval 2 translation - RepA  
 Y00514 (modified) - Replication-associated protein interval 2 translation - Replication-associated protein  
 NP\_619761 - Viral Rep  
 NP\_619761 - Viral Rep  
 YP\_009237578 - Viral Rep  
 YP\_009237578 - Viral Rep  
 KFI33827 - hypothetical protein CDS translation 3 - hypothetical protein CDS  
 AQU11729 - Viral Rep  
 AQU11729 - Viral Rep  
 KJ547621 (modified) - Capsid protein translation - Replication associated protein  
 KM821759 (modified) - Replication associated protein interval 2 translation - Replication associated protein  
 KM510189 (modified) - Replication associated protein interval 2 translation - Replication associated protein  
 KM510190 (modified) - Replication associated protein interval 2 translation - Replication associated protein  
 MH545531.1 - Replication associated protein interval 2 translation - Replication associated protein  
 MH545531.1 - Replication associated protein interval 2 translation - stem loop  
 MH545531.1 - Replication associated protein interval 2 translation - stem loop  
 MH545531.1 - Replication associated protein interval 2 translation - Replication associated protein  
 KR528569 (modified) - Replication associated protein interval 2 translation - Replication associated protein  
 DQ458791 (modified) - C1 CDS translation - Replication-associated protein interval 2  
 KU043409.1 - Hypothetical protein translation - Replication associated protein  
 MH545530.1 - Replication associated protein interval 2 translation - Replication associated protein  
 MH545530.1 - Replication associated protein interval 2 translation - stem loop  
 MH545530.1 - Replication associated protein interval 2 translation - stem loop  
 MH545530.1 - Replication associated protein interval 2 translation - Replication associated protein  
 FJ959083 (modified) - Replication associated protein interval 2 translation - hypothetical protein CDS  
 KR528560 (modified) - Capsid protein translation - Replication associated protein  
 KJ547627 (modified) - Replication associated protein interval 2 translation - Replication associated protein  
 AJD07493 - Viral Rep  
 AJD07493 - Viral Rep  
 KR528544 (modified) - Replication associated protein translation - Replication associated protein  
 AQU11749 - CDS  
 AQU11749 - replication protein  
 AQU11749 - Viral Rep  
 AQU11749 - Viral Rep  
 AQU11749 - Viral Rep  
 HQ335087 (modified) - Replication associated protein interval 2 translation - Replication associated protein  
 KX388495.1 - Replication associated protein translation - Replication associated protein  
 KX388495.1 - Replication associated protein translation - stem loop  
 KX388495.1 - Replication associated protein translation - stem loop  
 KM510191 (modified) - hypothetical protein CDS translation 2 - hypothetical protein CDS  
 KM510191 (modified) - Replication associated protein translation - hypothetical protein CDS  
 KM510191 (modified) - hypothetical protein CDS translation 2 - Replication associated protein  
 MH539648.1 - Capsid protein translation - hypothetical protein CDS  
 AQU11726 - P-loop NTPase  
 AQU11726 - P-loop NTPase  
 AVA16977 - RNA helicase  
 AVV68420 - RNA helicase  
 AVV68420 - RNA helicase  
 AVH76405 - Viral Rep  
 AVH76405 - Viral Rep  
 KR131749 (modified) - ORF1 CDS translation - putative movement protein CDS  
 YP\_009163920 - P-loop NTPase  
 YP\_009163920 - P-loop NTPase  
 ARD1303 - P-loop NTPase  
 ARD1303 - P-loop NTPase  
 AIF34818 - P-loop NTPase  
 AIF34818 - P-loop NTPase  
 AXH73508 - RNA helicase  
 AXH73508 - RNA helicase  
 AXG50856 - Viral Rep  
 AXG50856 - Viral Rep  
 AHC72271 - Viral Rep  
 AHC72271 - Viral Rep  
 YP\_008997794 - Viral Rep  
 YP\_008997794 - Viral Rep  
 AHC72167 - Viral Rep  
 AHC72167 - Viral Rep  
 AHC72177 - Viral Rep  
 AHC72177 - Viral Rep  
 AHC72177 - Viral Rep  
 WP\_027090230 - AAA  
 WP\_027090230 - P-loop NTPase  
 WP\_027090230 - AAA  
 WP\_027090230 - AAA  
 WP\_027090230 - P-loop NTPase  
 WP\_027090230 - P-loop NTPase  
 AXH76632 - P-loop NTPase  
 AXH76632 - P-loop NTPase  
 MG846357.1 - Replication associated protein interval 1 translation - Replication associated protein  
 ACE62799 - RNA helicase  
 ACE62799 - RNA helicase  
 AHB63242 - RNA helicase  
 AHB63242 - RNA helicase  
 ADY62649 - RNA helicase  
 ADY62649 - RNA helicase  
 ARE68406 - RNA helicase  
 ARE68406 - RNA helicase  
 YP\_009109643 - CDS  
 YP\_009109643 - HTH  
 YP\_009109643 - replication-associated protein  
 YP\_009109643 - HTH  
 YP\_009109643 - HTH  
 MH545529.1 - Replication associated protein interval 2 translation - Replication associated protein  
 YP\_004376332 - Viral Rep  
 YP\_004376332 - Viral Rep  
 YP\_009163936 - Viral Rep  
 YP\_009163936 - Viral Rep  
 MH378453.1 - Replication associated protein interval 2 translation - Replication associated protein  
 KX388527.1 - Replication associated protein translation - Ori  
 KX388527.1 - Replication associated protein translation - Ori  
 KX388527.1 - Replication associated protein translation - Ori  
 KX388527.1 - Replication associated protein translation - Replication associated protein  
 KX388527.1 - Replication associated protein translation - stem loop  
 ATY42470 - RNA helicase  
 ATY42470 - RNA helicase  
 AIL50149 - RNA helicase  
 AIL50149 - RNA helicase  
 AVT56110 - RNA helicase  
 AVT56110 - RNA helicase  
 ADC79191 - P-loop NTPase  
 ADC79191 - P-loop NTPase  
 JF755404 (modified) - ORF 9 (frame 1) translation - ORF 8 (frame 3)  
 JF755405 (modified) - ORF 9 (frame 1) translation - ORF 8 (frame 3)  
 JF755406 (modified) - ORF 9 (frame 1) translation - ORF 8 (frame 3)  
 JF755404 (modified) - ORF 8 (frame 3) translation - ORF 9 (frame 1)  
 JF755404 (modified) - ORF 9 (frame 1) translation - ORF 9 (frame 1)  
 JF755405 (modified) - ORF 8 (frame 3) translation - ORF 9 (frame 1)  
 JF755405 (modified) - ORF 9 (frame 1) translation - ORF 9 (frame 1)  
 JF755406 (modified) - ORF 8 (frame 3) translation - ORF 9 (frame 1)  
 JF755406 (modified) - ORF 9 (frame 1) translation - ORF 9 (frame 1)  
 KP153476 (modified) - Replication associated protein interval 2 translation - Replication associated protein  
 KP153477 (modified) - Replication associated protein interval 2 translation - Replication associated protein  
 KP153478 (modified) - Replication associated protein interval 2 translation - Replication associated protein  
 KP153479 (modified) - Replication associated protein interval 2 translation - Replication associated protein  
 KP153480 (modified) - Replication associated protein interval 2 translation - Replication associated protein  
 KP153481 (modified) - Replication associated protein interval 2 translation - Replication associated protein  
 KP153482 (modified) - Replication associated protein interval 2 translation - Replication associated protein  
 AKO84203 - RNA helicase  
 AKO84203 - RNA helicase  
 YP\_009237578 - Walker B motif  
 YP\_009237578 - Walker B motif  
 YP\_009237578 - Walker B motif  
 YP\_009051960 - P-loop NTPase  
 YP\_009051960 - P-loop NTPase  
 APG55798 - P-loop NTPase  
 APG55798 - P-loop NTPase  
 APZ87906 - RNA helicase  
 APZ87906 - RNA helicase  
 KT149412 (modified) - hypothetical protein CDS translation 2 - hypothetical protein CDS  
 KT149412 (modified) - Replication associated protein translation - hypothetical protein CDS  
 KT149412 (modified) - hypothetical protein CDS translation 2 - Replication associated protein  
 MG846357.1 - Replication associated protein interval 2 translation - Replication associated protein  
 KT149404 (modified) - hypothetical protein CDS translation 3 - hypothetical protein CDS  
 KT149404 (modified) - hypothetical protein CDS translation 4 - hypothetical protein CDS  
 KT149404 (modified) - hypothetical protein CDS translation 4 - hypothetical protein CDS  
 AFH02742 - Viral Rep  
 AFH02742 - Viral Rep  
 AEL28813 - Viral Rep  
 AEL28813 - Viral Rep  
 AXH74140 - Viral Rep  
 AXH74140 - Viral Rep  
 AVA16977 - replicase-associated protein  
 AVA16977 - start codon not determined CDS  
 AVV68420 - CDS  
 AVV68420 - replication-associated protein  
 AVA17000 - replicase-associated protein  
 AVA17000 - start codon not determined CDS  
 AVA16996 - replicase-associated protein  
 AVA16996 - start codon not determined CDS  
 ATD53351 - ORF1 CDS  
 ATD53351 - Rep Protein  
 KT869077.1 - Replication associated protein translation - Replication associated protein  
 KT869077.1 - Replication associated protein translation - Replication associated protein  
 AVA16998 - replicase-associated protein  
 AVA16998 - start codon not determined CDS  
 AWP80902 - Rep CDS  
 AWP80902 - replicase protein  
 YP\_009458619 - Viral Rep  
 YP\_009458619 - Viral Rep  
 BAP81877 - Viral Rep  
 BAP81877 - Viral Rep  
 APZ87906 - Viral Rep  
 APZ87906 - Viral Rep  
 AVT56110 - Viral Rep  
 AVT56110 - Viral Rep  
 AIL50149 - Viral Rep  
 AIL50149 - Viral Rep  
 ATY42470 - Viral Rep  
 ATY42470 - Viral Rep  
 MH545531.1 - Replication associated protein interval 1 translation - Replication associated protein  
 MH545531.1 - Replication associated protein interval 1 translation - stem loop  
 MH545531.1 - Replication associated protein interval 1 translation - stem loop  
 AKO71368 - Viral Rep  
 AKO71368 - Viral Rep  
 ALA65733 - Viral Rep  
 ALA65733 - Viral Rep  
 AIF76278 - RNA helicase  
 AIF76278 - RNA helicase  
 YP\_009126925 - RNA helicase  
 YP\_009126925 - RNA helicase  
 YP\_009109643 - P-loop NTPase  
 YP\_009109643 - P-loop NTPase  
 AXH74443 - RNA helicase  
 AXH74443 - RNA helicase  
 AQU11749 - RNA helicase  
 AQU11749 - RNA helicase  
 YP\_009126932 - P-loop NTPase  
 YP\_009126932 - P-loop NTPase  
 AXH73382 - P-loop NTPase  
 AXH73382 - P-loop NTPase  
 YP\_009126898 - P-loop NTPase  
 YP\_009126898 - P-loop NTPase  
 AWP80902 - P-loop NTPase  
 AWP80902 - P-loop NTPase  
 ATD53351 - RNA helicase  
 ATD53351 - RNA helicase  
 AVA16996 - RNA helicase  
 AVA16996 - RNA helicase  
 AVA16998 - RNA helicase  
 AVA16998 - RNA helicase  
 AVA17000 - RNA helicase  
 AVA17000 - RNA helicase  
 YP\_004376332 - RNA helicase  
 YP\_004376332 - RNA helicase  
 ATY70087 - Viral Rep  
 ATY70087 - Viral Rep  
 KFI33815 - hypothetical protein CDS interval 2 translation - ORF 5 (frame 2)  
 YP\_003084282 - Viral Rep  
 YP\_003084282 - Viral Rep  
 AXH77564 - Viral Rep  
 AXH77564 - Viral Rep  
 CBK25810 - Viral Rep  
 CBK25810 - Viral Rep  
 AQU11776 - Viral Rep  
 AQU11776 - Viral Rep  
 AQU11773 - Viral Rep  
 AQU11773 - Viral Rep  
 AEI54346 - Viral Rep  
 AEI54346 - Viral Rep  
 AGA18409 - Viral Rep  
 AGA18409 - Viral Rep  
 AXH75991 - Viral Rep  
 AXH75991 - Viral Rep  
 YP\_009163927 - Viral Rep  
 YP\_009163927 - Viral Rep  
 AEM05804 - Viral Rep  
 AEM05804 - Viral Rep  
 AXH74683 - Viral Rep  
 AXH74683 - Viral Rep  
 KT149406 (modified) - hypothetical protein CDS translation 2 - Replication associated protein  
 FJ959077 (modified) - hypothetical protein CDS translation 2 - hypothetical protein CDS  
 AXH76451 - RNA helicase  
 AXH76451 - RNA helicase  
 AGA18245 - RNA helicase  
 AGA18245 - RNA helicase  
 YP\_009021888 - P-loop NTPase  
 YP\_009021888 - P-loop NTPase  
 ALE29635 - RNA helicase  
 ALE29635 - RNA helicase  
 YP\_009237530 - RNA helicase  
 YP\_009237530 - RNA helicase  
 YP\_009115538 - P-loop NTPase  
 YP\_009115538 - P-loop NTPase  
 AWW06057 - RNA helicase  
 AWW06057 - RNA helicase  
 AGA18441 - P-loop NTPase

AGA18441 - P-loop NTPase  
 YP\_009116906 - P-loop NTPase  
 YP\_009116906 - P-loop NTPase  
 AGA18448 - RNA helicase  
 AGA18448 - RNA helicase  
 AMH87735 - P-loop NTPase  
 AMH87735 - P-loop NTPase  
 YP\_009126890 - RNA helicase  
 YP\_009126890 - RNA helicase  
 AXH76508 - RNA helicase  
 AXH76508 - RNA helicase  
 AXH73061 - RNA helicase  
 AXH73061 - RNA helicase  
 AXH73061 - RNA helicase  
 YP\_009163927 - P-loop NTPase  
 YP\_009163927 - P-loop NTPase  
 AXH75991 - P-loop NTPase  
 AXH75991 - P-loop NTPase  
 AQR57898 - P-loop NTPase  
 AQR57898 - P-loop NTPase  
 ARO38300 - P-loop NTPase  
 ARO38300 - P-loop NTPase  
 AIF76269 - P-loop NTPase  
 AIF76269 - P-loop NTPase  
 YP\_009126879 - P-loop NTPase  
 YP\_009126879 - P-loop NTPase  
 YP\_009116902 - P-loop NTPase  
 YP\_009116902 - P-loop NTPase  
 YP\_009116902 - P-loop NTPase  
 YP\_009109675 - P-loop NTPase  
 YP\_009109675 - P-loop NTPase  
 AIF34802 - P-loop NTPase  
 AIF34802 - P-loop NTPase  
 AJD20393 - Gemini AL1 M  
 AJD20393 - Gemini AL1 M  
 KY487844.1 - Replication associated protein translation -  
 Replication associated protein  
 YP\_006281010 - P-loop NTPase  
 YP\_006281010 - P-loop NTPase  
 KR528559 (modified) - Capsid protein translation -  
 Replication associated protein  
 AVH76405 - RNA helicase  
 AVH76405 - RNA helicase  
 AVH76405 - RNA helicase  
 AXH76879 - P-loop NTPase  
 AXH76879 - P-loop NTPase  
 ALE29847 - RNA helicase  
 ALE29847 - RNA helicase  
 YP\_009001747 - RNA helicase  
 YP\_009001747 - RNA helicase  
 AQU11773 - P-loop NTPase  
 AQU11773 - P-loop NTPase  
 YP\_009021245 - RNA helicase  
 YP\_009021245 - RNA helicase  
 AXH78100 - RNA helicase  
 AXH78100 - RNA helicase  
 AQU11776 - P-loop NTPase  
 AQU11776 - P-loop NTPase  
 KT214386 (modified) - V2 CDS translation - V3 CDS  
 AXH75780 - Viral Rep  
 AXH75780 - Viral Rep  
 KP005454 (modified) - Capsid protein translation -  
 hypothetical protein CDS  
 KP005454 (modified) - hypothetical protein CDS  
 translation - hypothetical protein CDS  
 KP005453 (modified) - Capsid protein translation -  
 hypothetical protein CDS  
 KP005453 (modified) - hypothetical protein CDS  
 translation - hypothetical protein CDS  
 AIF34818 - Viral Rep  
 AIF34818 - Viral Rep  
 KM510189 (modified) - hypothetical protein CDS  
 translation - hypothetical protein CDS  
 KM510190 (modified) - hypothetical protein CDS  
 translation - hypothetical protein CDS  
 KM510189 (modified) - Capsid protein translation -  
 hypothetical protein CDS  
 KM510189 (modified) - hypothetical protein CDS  
 translation - hypothetical protein CDS  
 KM510190 (modified) - Capsid protein translation -  
 hypothetical protein CDS  
 KM510190 (modified) - hypothetical protein CDS  
 translation - hypothetical protein CDS  
 AIX11626 - RNA helicase  
 AIX11626 - RNA helicase  
 AOV86234 - RNA helicase  
 AOV86234 - RNA helicase  
 AOV86234 - RNA helicase  
 KJ547647 (modified) - hypothetical protein CDS translation -  
 hypothetical protein CDS  
 KJ547647 (modified) - Replication associated protein  
 translation - hypothetical protein CDS  
 KJ547647 (modified) - hypothetical protein CDS translation -  
 Replication associated protein  
 KT149400 (modified) - Replication associated protein  
 translation - hypothetical protein CDS  
 KJ547631 (modified) - hypothetical protein CDS translation -  
 Replication associated protein  
 APG55798 - CDS  
 APG55798 - GluZincin  
 APG55798 - Rep Protein  
 APG55798 - GluZincin  
 APG55798 - GluZincin  
 YP\_009237586 - P-loop NTPase  
 YP\_009237586 - P-loop NTPase  
 AXH73393 - RNA helicase  
 AXH73393 - RNA helicase  
 AXH76040 - RNA helicase  
 AXH76040 - RNA helicase  
 KT862236 (modified) - Capsid protein translation -  
 Replication associated protein  
 AVX29443 - RNA helicase  
 AVX29443 - RNA helicase  
 AXH73290 - Viral Rep  
 AXH73290 - Viral Rep  
 AXH73290 - Viral Rep  
 AXH75585 - Viral Rep  
 AXH75585 - Viral Rep  
 AGS47835 - P-loop NTPase  
 AGS47835 - P-loop NTPase  
 KU043420.1 - Replication associated protein translation -  
 Hypothetical protein  
 AXH73792 - Viral Rep  
 AXH73792 - Viral Rep  
 AIF34798 - P-loop NTPase  
 AIF34798 - P-loop NTPase  
 AEL22996 - P-loop NTPase  
 AEL22996 - P-loop NTPase  
 YP\_004778177 - P-loop NTPase  
 YP\_004778177 - P-loop NTPase  
 AJD07493 - RNA helicase  
 AJD07493 - RNA helicase  
 AGA18388 - P-loop NTPase  
 AGA18388 - P-loop NTPase  
 AUW34331 - RNA helicase  
 AUW34331 - RNA helicase  
 YP\_009163936 - P-loop NTPase  
 YP\_009163936 - P-loop NTPase  
 AGA18473 - P-loop NTPase  
 AGA18473 - P-loop NTPase  
 AJM89742 - P-loop NTPase  
 AJM89742 - P-loop NTPase  
 YP\_009237516 - RNA helicase  
 YP\_009237516 - RNA helicase  
 AXH77740 - P-loop NTPase  
 AXH77740 - P-loop NTPase  
 KF133827 - hypothetical protein CDS translation -  
 hypothetical protein CDS  
 KM874309 (modified) - Capsid protein translation -  
 Replication associated protein  
 KJ547632 (modified) - hypothetical protein CDS translation -  
 hypothetical protein CDS  
 ARE68406 - CDS  
 ARE68406 - replication associated protein  
 ARE68406 - Viral Rep  
 ARE68406 - Viral Rep  
 ARE68406 - Viral Rep  
 MH617615.1 - Capsid protein translation - CHAP domain  
 protein CDS  
 KU043420.1 - Hypothetical protein translation 2 -  
 Hypothetical protein  
 MH617135.1 - Replication associated protein translation -  
 hypothetical protein CDS  
 MH617135.1 - Replication associated protein translation -  
 Replication associated protein  
 JF713716 (modified) - Replication associated protein  
 translation - unknown CDS  
 AXH74140 - RNA helicase  
 AXH74140 - RNA helicase  
 AIF76278 - CDS  
 AIF76278 - Rep Protein  
 AIF76278 - Viral Rep  
 AIF76278 - Viral Rep  
 AIF76278 - Viral Rep  
 BAP81877 - RNA helicase  
 BAP81877 - RNA helicase  
 YP\_009109660 - P-loop NTPase  
 YP\_009109660 - P-loop NTPase  
 JX908740 (modified) - Capsid protein translation -  
 Replication associated protein  
 AJD07478 - RNA helicase  
 AJD07478 - RNA helicase  
 AXH75674 - P-loop NTPase  
 AXH75674 - P-loop NTPase  
 YP\_009109670 - P-loop NTPase  
 YP\_009109670 - P-loop NTPase  
 KF133814 - Replication associated protein interval 2  
 translation - Replication associated protein  
 AIF76259 - RNA helicase  
 AIF76259 - RNA helicase  
 KF133828 - Capsid protein translation - hypothetical  
 protein CDS  
 AMD39533 - AAA 16  
 AMD39533 - AAA 16  
 YP\_764455 - AAA 16  
 YP\_764455 - AAA 16  
 KT732825 (modified) - Replication associated protein  
 interval 2 translation - Replication associated protein  
 YP\_009237530 - CDS  
 YP\_009237530 - replication associated protein  
 YP\_009237530 - Viral Rep  
 YP\_009237530 - Viral Rep  
 YP\_009237530 - Viral Rep  
 ALE29635 - CDS  
 ALE29635 - replication associated protein  
 ALE29635 - Viral Rep  
 ALE29635 - Viral Rep  
 ALE29635 - Viral Rep  
 AGA19549 - Gemini AL1  
 AGA19549 - Gemini AL1  
 FJ959083 (modified) - Replication associated protein  
 interval 2 translation - Replication associated protein  
 AXH76632 - CDS  
 AXH76632 - helicase Protein  
 AXH76632 - Viral Rep  
 AXH76632 - Viral Rep  
 AXH76632 - Viral Rep  
 YP\_009458619 - RNA helicase  
 YP\_009458619 - RNA helicase  
 YP\_009021245 - CDS  
 YP\_009021245 - replication-associated protein  
 YP\_009021245 - Viral Rep  
 AOV86234 - CDS  
 AOV86234 - putative rep protein  
 AOV86234 - Viral Rep  
 AXH73056 - CDS  
 AXH73056 - putative viral replication protein  
 AXH73056 - Viral Rep  
 YP\_009109643 - CDS  
 YP\_009109643 - replication-associated protein  
 YP\_009109643 - Viral Rep  
 ARI44308 - Rep CDS  
 ARI44308 - replication-associated protein  
 ARI44308 - Viral Rep  
 AHH31400 - CDS  
 AHH31400 - replication-associated protein  
 AHH31400 - Viral Rep  
 AEL28791 - CDS  
 AEL28791 - replication-associated protein  
 AEL28791 - Viral Rep  
 YP\_764455 - ORFV1; putative replicase CDS  
 YP\_764455 - rep protein  
 YP\_764455 - Viral Rep  
 AIF34812 - CDS  
 AIF34812 - Gemini AL1 M  
 AIF34812 - replication-associated protein  
 YP\_009116902 - CDS  
 YP\_009116902 - replication-associated protein  
 YP\_009116902 - Viral Rep  
 AEL28793 - CDS  
 AEL28793 - replication-associated protein  
 AEL28793 - Viral Rep  
 AWW06057 - CDS  
 AWW06057 - helicase Protein  
 AWW06057 - Viral Rep  
 ALE29827 - CDS  
 ALE29827 - replication associated protein  
 ALE29827 - Viral Rep  
 AMD39533 - replication-associated protein  
 AMD39533 - V1 CDS  
 AMD39533 - Viral Rep  
 AVX29443 - CDS  
 AVX29443 - replication initiator protein  
 AVX29443 - Viral Rep  
 AXH74443 - CDS  
 AXH74443 - putative viral replication protein  
 AXH74443 - Viral Rep  
 AGA18441 - CDS  
 AGA18441 - hypothetical protein  
 AGA18441 - Viral Rep  
 AIF76259 - CDS  
 AIF76259 - Rep Protein  
 AIF76259 - Viral Rep  
 YP\_009163920 - CDS  
 YP\_009163920 - putative spliced replication initiation  
 protein  
 YP\_009163920 - Viral Rep  
 AIF34802 - CDS  
 AIF34802 - replication-associated protein  
 AIF34802 - Viral Rep  
 AIF76277 - CDS  
 AIF76277 - Rep Protein  
 AIF76277 - Viral Rep  
 KF738877 (modified) - Replication associated protein  
 interval 2 translation - Replication associated protein  
 YP\_009126898 - CDS  
 YP\_009126898 - replication-associated protein  
 YP\_009126898 - Viral Rep  
 AGA18265 - CDS  
 AGA18265 - hypothetical protein  
 AGA18265 - Viral Rep  
 AIX11626 - Rep CDS  
 AIX11626 - replicase Protein  
 AIX11626 - Viral Rep  
 AUW34331 - Rep CDS  
 AUW34331 - replication-associated protein  
 AUW34331 - Viral Rep  
 YP\_009109675 - CDS  
 YP\_009109675 - replication-associated protein  
 YP\_009109675 - Viral Rep  
 AGG39817 - CDS  
 AGG39817 - replication-associated protein  
 AGG39817 - Viral Rep  
 AJM89742 - CDS  
 AJM89742 - replication associated protein  
 AJM89742 - Viral Rep  
 WP\_027090230 - other interval 2  
 YP\_009237578 - other interval 2  
 WP\_027090230 - Walker B motif  
 YP\_009237578 - Walker B motif  
 AAK73450 - C1/C2 CDS  
 AAK73450 - Gemini AL1 M  
 AAK73450 - Rep Protein  
 YP\_009126879 - CDS  
 YP\_009126879 - replication-associated protein  
 YP\_009126879 - Viral Rep  
 YP\_009142778 - Gemini AL1  
 YP\_009142778 - putative replication protein  
 YP\_009142778 - rep CDS  
 YP\_009237504 - CDS  
 YP\_009237504 - Gemini AL1  
 YP\_009237504 - replication associated protein  
 AIF34803 - CDS  
 AIF34803 - Gemini AL1  
 AIF34803 - replication-associated protein  
 YP\_009237555 - CDS  
 YP\_009237555 - Gemini AL1  
 YP\_009237555 - replication associated protein  
 AXH77952 - Gemini AL1  
 AXH77952 - Geminivirus Rep catalytic domain CDS  
 AXH77952 - Rep catalytic domain protein  
 AXH74707 - CDS  
 AXH74707 - Gemini AL1  
 AXH74707 - Rep Protein  
 AAK73450 - C1/C2 CDS  
 AAK73450 - Gemini AL1  
 AAK73450 - Rep Protein  
 AXH78100 - CDS  
 AXH78100 - helicase Protein  
 AXH78100 - Viral Rep  
 AJD07498 - CDS

AJD07498 - replication-associated protein  
 AJD07498 - Viral Rep  
 AXH73056 - CDS  
 AXH73056 - P-loop NTPase  
 AXH73056 - putative viral replication protein  
 ARE68406 - CDS  
 ARE68406 - replication associated protein  
 YP\_009237554 - Gemini AL1  
 YP\_009237554 - CDS  
 YP\_009237554 - Gemini AL1 M  
 YP\_009237554 - replication associated protein  
 AMD39533 - AAA 16  
 AMD39533 - AAA 16  
 AMD39533 - replication-associated protein  
 AMD39533 - replication-associated protein  
 AMD39533 - RNA helicase  
 AMD39533 - RNA helicase  
 AMD39533 - V1 CDS  
 AMD39533 - V1 CDS  
 AMD39533 - Walker A/P-loop  
 AMD39533 - Walker A/P-loop  
 AMD39533 - Walker A/P-loop  
 AMD39533 - Walker A/P-loop  
 AIF76255 - CDS  
 AIF76255 - P-loop NTPase  
 AIF76255 - Rep Protein  
 AIF76255 - Walker A/P-loop  
 YP\_009237578 - CDS  
 YP\_009237578 - replication associated protein  
 YP\_009237578 - RNA helicase  
 YP\_009237578 - Walker A motif  
 WP\_027090230 - AAA  
 WP\_027090230 - ATP-dependent Clp protease ATP-binding subunit Protein  
 WP\_027090230 - P-loop NTPase  
 WP\_027090230 - P-loop NTPase  
 WP\_027090230 - Walker A motif  
 AGA19549 - C1 CDS  
 AGA19549 - Gemini AL1 M  
 AGA19549 - Rep Protein  
 AKR53286 - CDS  
 AKR53286 - P-loop NTPase  
 AKR53286 - viral replicase protein  
 KX388507.1 - Replication associated protein translation - stem loop  
 KX388507.1 - Replication associated protein translation - stem loop  
 JX559621 (modified) - hypothetical protein CDS translation  
 2 - hypothetical protein CDS  
 JX559622 (modified) - hypothetical protein CDS translation  
 2 - hypothetical protein CDS  
 JX559621 (modified) - hypothetical protein CDS translation  
 2 - stem loop  
 JX559622 (modified) - hypothetical protein CDS translation  
 2 - stem loop  
 AJD20393 - CDS  
 AJD20393 - Gemini AL1  
 AJD20393 - replication associated protein  
 AGG39817 - CDS  
 AGG39817 - P-loop NTPase  
 AGG39817 - replication-associated protein  
 WP\_027090230 - ATP-dependent Clp protease ATP-binding subunit Protein  
 WP\_027090230 - P-loop NTPase  
 WP\_027090230 - AAA  
 WP\_027090230 - ATP-dependent Clp protease ATP-binding subunit Protein  
 WP\_027090230 - P-loop NTPase  
 WP\_027090230 - Walker B motif  
 AQR57902 - TIP49  
 AQR57902 - Rep CDS  
 AQR57902 - replicase Protein  
 AQR57902 - RNA helicase  
 AXH73290 - CDS  
 AXH73290 - P-loop NTPase  
 AXH73290 - putative viral replication protein  
 YP\_009237541 - AAA  
 YP\_009237541 - CDS  
 YP\_009237541 - P-loop NTPase  
 YP\_009237541 - replication associated protein  
 AUF34964 - CDS  
 AUF34964 - P-loop NTPase  
 AUF34964 - putative replication-associated protein  
 YP\_009126892 - CDS  
 YP\_009126892 - replication-associated protein  
 YP\_009126892 - RNA helicase  
 AQU11729 - CDS  
 AQU11729 - P-loop NTPase  
 AQU11729 - replication protein  
 AHH31400 - CDS  
 ARI44308 - Rep CDS  
 AHH31400 - replication-associated protein  
 ARI44308 - replication-associated protein  
 AHH31400 - RNA helicase  
 ARI44308 - RNA helicase  
 AMD39533 - AAA 16  
 AMD39533 - replication-associated protein  
 AMD39533 - RNA helicase  
 AMD39533 - V1 CDS  
 AUT13975 - CDS  
 AUT13975 - replication protein  
 AUT13975 - RNA helicase  
 YP\_009170674 - rep CDS  
 YP\_009170674 - replicase Protein  
 YP\_009170674 - RNA helicase  
 YP\_009237578 - CDS  
 YP\_009237578 - replication associated protein  
 YP\_009237578 - RNA helicase  
 YP\_764455 - AAA 16  
 YP\_764455 - ORFV1; putative replicase CDS  
 YP\_764455 - rep protein  
 YP\_764455 - RNA helicase  
 AGA18409 - CDS  
 AGA18409 - hypothetical protein  
 AGA18409 - P-loop NTPase  
 NP\_955176 - CDS  
 NP\_955176 - Rep-like protein  
 ARE67375 - RNA helicase  
 NP\_955176 - RNA helicase  
 ARE67375 - SWPV2-147 CDS  
 ARE67375 - SWPV2-ORF147 Protein  
 AEL28813 - CDS  
 AEL28813 - replication-associated protein  
 AEL28813 - RNA helicase  
 AFH02742 - CDS  
 AFH02742 - P-loop NTPase  
 AFH02742 - putative Rep Protein  
 AQU11733 - CDS  
 AQU11733 - P-loop NTPase  
 AQU11733 - replication protein  
 AIF76255 - CDS  
 AIF76255 - P-loop NTPase  
 AIF76255 - Rep Protein  
 AXH77121 - CDS  
 AXH77121 - helicase Protein  
 AXH77121 - RNA helicase  
 AJP36430 - CDS  
 AJP36430 - replication-associated protein  
 AJP36430 - RNA helicase  
 YP\_009126938 - CDS  
 YP\_009126938 - P-loop NTPase  
 YP\_009126938 - replication-associated protein  
 AXG50856 - M-Rep CDS  
 AXG50856 - master replication initiator protein  
 AXG50856 - P-loop NTPase  
 NP\_619761 - putative CDS  
 NP\_619761 - RNA helicase  
 NP\_619761 - virus replication-associated protein  
 AKO71368 - CDS  
 ALA65733 - CDS  
 AKO71368 - Replication associated protein  
 ALA65733 - replication initiation protein  
 AKO71368 - RNA helicase  
 ALA65733 - RNA helicase  
 AHC72271 - M-Rep CDS  
 AHC72271 - master replication initiator protein  
 AHC72271 - RNA helicase  
 YP\_008997794 - M-Rep CDS  
 YP\_008997794 - master replication initiator protein  
 YP\_008997794 - RNA helicase  
 AHC72177 - M-Rep CDS  
 AHC72177 - master replication initiator protein  
 AHC72177 - RNA helicase  
 AHC72167 - M-Rep CDS  
 AHC72167 - master replication initiator protein  
 AHC72167 - P-loop NTPase  
 CBK25810 - rep CDS  
 CBK25810 - replication association protein  
 CBK25810 - RNA helicase  
 ATY70087 - Rep CDS  
 ATY70087 - replication initiator protein  
 ATY70087 - RNA helicase  
 ADC79191 - P-loop NTPase  
 ADC79191 - CDS  
 ADC79191 - RNA helicase  
 ADC79191 - V1 Protein  
 AGA18391 - CDS  
 AGA18391 - hypothetical protein  
 AGA18391 - P-loop NTPase  
 AWR89667 - CDS  
 AWR89667 - P-loop NTPase  
 AWR89667 - replication initiation protein  
 AQU11717 - CDS  
 AQU11724 - CDS  
 AQU11717 - P-loop NTPase  
 AQU11724 - P-loop NTPase  
 AQU11717 - replication protein  
 AQU11724 - replication protein  
 AEL87784 - CDS  
 AEL87784 - P-loop NTPase  
 AEL87784 - putative replication-associated protein  
 YP\_009109660 - replication-associated protein  
 YP\_009109660 - start codon not determined CDS  
 KX388528.1 - hypothetical protein CDS translation - hypothetical protein CDS  
 KX388528.1 - hypothetical protein CDS translation - stem loop  
 KY487868.1 - Replication associated protein translation - Replication associated protein  
 YP\_009237571 - CDS  
 YP\_009237571 - P-loop NTPase  
 YP\_009237571 - replication associated protein  
 AWR89667 - CDS  
 AWR89667 - replication initiation protein  
 KY487956.1 - Replication associated protein translation - Replication associated protein  
 YP\_003084282 - CDS  
 YP\_003084282 - putative Rep protein  
 YP\_003084282 - RNA helicase  
 AOV86234 - CDS  
 AOV86234 - DNA pol3 delta2  
 AOV86234 - putative rep protein  
 AIW81537 - ORF1 CDS  
 AIW81537 - replicase protein  
 AIW81537 - RNA helicase  
 AQU11726 - P-loop NTPase  
 AQU11726 - CDS  
 AQU11726 - P-loop NTPase  
 AQU11726 - replication protein  
 AGA18265 - CDS  
 AGA18265 - hypothetical protein  
 AGA18265 - P-loop NTPase  
 AJD07498 - CDS  
 AJD07498 - replication-associated protein  
 AJD07498 - RNA helicase  
 AXH73792 - CDS  
 AXH73792 - P-loop NTPase  
 AXH73792 - putative viral replication protein  
 YP\_009237564 - CDS  
 YP\_009237564 - P-loop NTPase  
 YP\_009237564 - replication associated protein  
 ALE29688 - CDS  
 ALE29688 - replication associated protein  
 ALE29688 - RNA helicase  
 YP\_009001742 - CDS  
 YP\_009001742 - P-loop NTPase  
 YP\_009001742 - replication-associated protein  
 YP\_009448204 - rep CDS  
 YP\_009448204 - RNA helicase  
 YP\_009448204 - rolling-circle replication protein  
 AGA18286 - CDS  
 AGA18286 - hypothetical protein  
 AGA18286 - P-loop NTPase  
 AQR57898 - Rep CDS  
 AQR57898 - Rep CDS  
 AQR57898 - replicase Protein  
 AQR57898 - replicase Protein  
 AEL22996 - CDS  
 AEL22996 - CDS  
 YP\_004778177 - CDS  
 YP\_004778177 - CDS  
 AEL22996 - Rep protein  
 AEL22996 - Rep protein  
 YP\_004778177 - Rep protein  
 YP\_004778177 - Rep protein  
 AGA18286 - CDS  
 AGA18286 - CDS  
 AGA18286 - hypothetical protein  
 AGA18286 - hypothetical protein  
 JX904185 (modified) - Replication associated protein translation - Replication associated protein  
 YP\_009163936 - CDS  
 YP\_009163936 - CDS  
 YP\_009163936 - putative replication initiation protein  
 YP\_009163936 - putative replication initiation protein  
 JX904077 (modified) - Replication associated protein translation - Replication associated protein  
 APA62649 - CDS  
 APA62649 - CDS  
 APA62649 - putative replication protein  
 APA62649 - putative replication protein  
 AGA18409 - CDS  
 AGA18409 - CDS  
 AGA18409 - hypothetical protein  
 AGA18409 - hypothetical protein  
 JX904473 (modified) - Replication associated protein translation - Replication associated protein  
 KT149398 (modified) - hypothetical protein CDS translation - hypothetical protein CDS  
 AIF76259 - CDS  
 AIF76259 - CDS  
 AIF76259 - Rep Protein  
 AIF76259 - Rep Protein  
 ALE29847 - CDS  
 ALE29847 - replication associated protein  
 ALE29847 - CDS  
 ALE29847 - replication associated protein  
 YP\_009001747 - CDS  
 YP\_009001747 - CDS  
 YP\_009001747 - replication-associated protein  
 YP\_009001747 - replication-associated protein  
 KY348843.1 - Replication associated protein translation - Replication associated protein  
 KP153359 (modified) - Replication associated protein translation - Replication associated protein  
 AVX29443 - CDS  
 AVX29443 - CDS  
 AVX29443 - replication initiator protein  
 AVX29443 - replication initiator protein  
 ALE29635 - CDS  
 ALE29635 - CDS  
 ALE29635 - replication associated protein  
 ALE29635 - replication associated protein  
 AUT13975 - CDS  
 AUT13975 - CDS  
 AUT13975 - replication protein  
 AUT13975 - replication protein  
 AIF34802 - CDS  
 AIF34802 - CDS  
 AIF34802 - replication-associated protein  
 AIF34802 - replication-associated protein  
 AXL65935 - CDS  
 AXL65935 - CDS  
 AXL65935 - replication-associated protein  
 AXL65935 - replication-associated protein  
 AUM61711 - Rep CDS  
 AUM61711 - Rep CDS  
 AUM61711 - Rep Protein  
 AUM61711 - Rep Protein  
 AXH76667 - CDS  
 AXH76667 - CDS  
 AXH76667 - putative viral replication protein  
 AXH76667 - putative viral replication protein  
 JX904469 (modified) - Replication associated protein translation - Replication associated protein  
 AQU11726 - CDS  
 AQU11726 - CDS  
 AQU11726 - replication protein  
 AQU11726 - replication protein  
 BAP81877 - Rep CDS  
 BAP81877 - Rep CDS  
 BAP81877 - rolling circle replication initiator protein  
 BAP81877 - rolling circle replication initiator protein  
 ALE29688 - CDS  
 ALE29688 - CDS  
 ALE29688 - replication associated protein  
 ALE29688 - replication associated protein  
 YP\_009001742 - CDS  
 YP\_009001742 - CDS



YP_009001742 - replication-associated protein	AXL65907 - replication-associated protein	AUM61904 - Rep Protein
YP_009001742 - replication-associated protein	JX904518 (modified) - Replication associated protein	AUM61904 - Rep Protein
YP_009458619 - rep CDS	translation - Replication associated protein	KM573768 (modified) - Replication associated protein
YP_009458619 - rep CDS	AXH74936 - CDS	translation - Replication associated protein
YP_009458619 - replication-association protein	AXH74936 - CDS	ETO15557 - CDS
YP_009458619 - replication-association protein	AXH74936 - putative viral replication protein	ETO15557 - CDS
YP_009237530 - CDS	AXH74936 - putative viral replication protein	ETO15557 - rep Protein
YP_009237530 - CDS	AUM62033 - Rep CDS	ETO15557 - rep Protein
YP_009237530 - replication associated protein	AUM62033 - Rep CDS	YP_009237504 - CDS
YP_009237530 - replication associated protein	AUM62033 - Rep Protein	YP_009237504 - CDS
ARI44308 - Rep CDS	AUM62033 - Rep Protein	YP_009237504 - replication associated protein
ARI44308 - Rep CDS	AXH74683 - CDS	YP_009237504 - replication associated protein
ARI44308 - replication-associated protein	AXH74683 - CDS	JX904523 (modified) - Replication associated protein
ARI44308 - replication-associated protein	AXH74683 - putative viral replication protein	translation - Replication associated protein
AHH31400 - CDS	AXH74683 - putative viral replication protein	AUM61656 - Rep CDS
AHH31400 - CDS	YP_009506293 - CDS	AUM61656 - Rep CDS
AHH31400 - replication-associated protein	YP_009506293 - CDS	AUM61656 - Rep Protein
AHH31400 - replication-associated protein	YP_009506293 - Rep Protein	AUM61656 - Rep Protein
YP_009506303 - CDS	YP_009506293 - Rep Protein	AGA18391 - CDS
YP_009506303 - CDS	YP_009047144 - CDS	AGA18391 - CDS
YP_009506303 - Rep protein	YP_009047144 - CDS	AGA18391 - hypothetical protein
YP_009506303 - Rep protein	YP_009047144 - replication-associated protein	AGA18391 - hypothetical protein
AKR53286 - CDS	YP_009047144 - replication-associated protein	JX904427 (modified) - Replication associated protein
AKR53286 - CDS	KJ547653 (modified) - Replication associated protein	translation - Replication associated protein
AKR53286 - viral replicase protein	translation - Replication associated protein	ORX42374 - CDS
AKR53286 - viral replicase protein	AOV86303 - CDS	ORX42374 - CDS
ADC79191 - CDS	AOV86303 - CDS	ORX42374 - hypothetical protein
ADC79191 - CDS	AOV86303 - putative rep protein	ORX42374 - hypothetical protein
ADC79191 - V1 Protein	AOV86303 - putative rep protein	AUM61793 - Rep CDS
ADC79191 - V1 Protein	ARE67375 - SWPV2-147 CDS	AUM61793 - Rep CDS
AOV86234 - CDS	ARE67375 - SWPV2-147 CDS	AUM61793 - Rep Protein
AOV86234 - CDS	ARE67375 - SWPV2-ORF147 Protein	AUM61793 - Rep Protein
AOV86234 - putative rep protein	ARE67375 - SWPV2-ORF147 Protein	KU203355.1 - Replication associated protein translation -
AOV86234 - putative rep protein	NP_955176 - CDS	Replication associated protein
AKO84203 - CDS	NP_955176 - CDS	KU203354.1 - Replication associated protein translation -
AKO84203 - CDS	NP_955176 - Rep-like protein	Replication associated protein
AKO84203 - replicase Protein	NP_955176 - Rep-like protein	JX904394 (modified) - Replication associated protein
AKO84203 - replicase Protein	JF755411 (modified) - Replication associated protein	translation - Replication associated protein
AVT56110 - CDS	translation - Replication associated protein	AQU11724 - CDS
AVT56110 - CDS	JF755412 (modified) - Replication associated protein	AQU11724 - CDS
AVT56110 - replicase Protein	translation - Replication associated protein	AQU11724 - replication protein
AVT56110 - replicase Protein	JF755413 (modified) - Replication associated protein	AQU11724 - replication protein
AIL50149 - CDS	translation - Replication associated protein	AQU11717 - CDS
AIL50149 - CDS	JF755414 (modified) - Replication associated protein	AQU11717 - CDS
AIL50149 - replicase Protein	translation - Replication associated protein	AQU11717 - replication protein
AIL50149 - replicase Protein	AQU11733 - CDS	AQU11717 - replication protein
ATY42470 - CDS	AQU11733 - CDS	JF755407 (modified) - Replication associated protein
ATY42470 - CDS	AQU11733 - replication protein	interval 1 translation - Replication associated protein
ATY42470 - putative replication associated protein	AQU11733 - replication protein	KJ437671 (modified) - Movement protein translation -
ATY42470 - putative replication associated protein	AXH76451 - CDS	Movement protein
KC241982 (modified) - Replication associated protein	AXH76451 - CDS	AJD07478 - CDS
translation - Replication associated protein	AXH76451 - CDS	AJD07478 - CDS
KC241982 (modified) - Replication associated protein	AXH76451 - helicase Protein	AJD07478 - replication-associated protein
translation - Replication associated protein	AXH76451 - helicase Protein	AJD07478 - replication-associated protein
AXR86424 - CDS	JX904076 (modified) - Replication associated protein	AFH02742 - CDS
AXR86424 - CDS	translation - Replication associated protein	AFH02742 - CDS
AXR86424 - replicase Protein	AEI54346 - CDS	AFH02742 - putative Rep Protein
AXR86424 - replicase Protein	AEI54346 - rep protein	AFH02742 - putative Rep Protein
AIF34812 - CDS	AEI54346 - rep protein	AXH74140 - CDS
AIF34812 - CDS	KP153430 (modified) - Replication associated protein	AXH74140 - CDS
AIF34812 - replication-associated protein	translation - Replication associated protein	AXH74140 - helicase Protein
AIF34812 - replication-associated protein	KP153431 (modified) - Replication associated protein	AXH74140 - helicase Protein
AXG50856 - M-Rep CDS	translation - Replication associated protein	YP_009021245 - CDS
AXG50856 - M-Rep CDS	KP153432 (modified) - Replication associated protein	YP_009021245 - CDS
AXG50856 - master replication initiator protein	translation - Replication associated protein	YP_009021245 - replication-associated protein
AXG50856 - master replication initiator protein	KP153433 (modified) - Replication associated protein	YP_009021245 - replication-associated protein
AHC72167 - M-Rep CDS	translation - Replication associated protein	ARO38300 - Rep CDS
AHC72167 - M-Rep CDS	KP153429 (modified) - Replication associated protein	ARO38300 - Rep CDS
AHC72167 - master replication initiator protein	translation - Replication associated protein	ARO38300 - replicase Protein
AHC72167 - master replication initiator protein	AGA18265 - CDS	ARO38300 - replicase Protein
AHC72177 - M-Rep CDS	AGA18265 - CDS	AGA18473 - CDS
AHC72177 - M-Rep CDS	AGA18265 - hypothetical protein	AGA18473 - CDS
AHC72177 - master replication initiator protein	AGA18265 - hypothetical protein	AGA18473 - hypothetical protein
AHC72177 - master replication initiator protein	JX904144 (modified) - Replication associated protein	AGA18473 - hypothetical protein
AIF34818 - CDS	translation - Replication associated protein	AUM61742 - Rep CDS
AIF34818 - CDS	AUM61703 - Rep CDS	AUM61742 - Rep CDS
AIF34818 - replication-associated protein	AUM61703 - Rep CDS	AUM61742 - Rep Protein
AIF34818 - replication-associated protein	AUM61703 - Rep Protein	AUM

JX305998 (modified) - Replication associated protein translation - hypothetical protein CDS  
JX305998 (modified) - Replication associated protein translation - Replication associated protein  
JQ023166 (modified) - Replication associated protein translation - hypothetical protein CDS  
JX305991 (modified) - Replication associated protein translation - hypothetical protein CDS  
JX305992 (modified) - Replication associated protein translation - hypothetical protein CDS  
JX305993 (modified) - Replication associated protein translation - hypothetical protein CDS  
JX305994 (modified) - Replication associated protein translation - hypothetical protein CDS  
JX305995 (modified) - Replication associated protein translation - hypothetical protein CDS  
JX305996 (modified) - Replication associated protein translation - hypothetical protein CDS  
JX305997 (modified) - Replication associated protein translation - hypothetical protein CDS  
JX305992 (modified) - Replication associated protein translation - Replication associated protein  
JQ023166 (modified) - Replication associated protein translation - Replication associated protein  
JX305991 (modified) - Replication associated protein translation - Replication associated protein  
JX305993 (modified) - Replication associated protein translation - Replication associated protein  
JX305994 (modified) - Replication associated protein translation - Replication associated protein  
JX305995 (modified) - Replication associated protein translation - Replication associated protein  
JX305996 (modified) - Replication associated protein translation - Replication associated protein  
JX305997 (modified) - Replication associated protein translation - Replication associated protein  
AIF76255 - CDS  
AIF76255 - Q-loop/lid  
AIF76255 - Rep Protein  
WP\_095545523 - hypothetical protein  
WP\_095545523 - hypothetical protein  
YP\_009126938 - CDS  
YP\_009126938 - replication-associated protein  
YP\_009126938 - CDS  
YP\_009126938 - replication-associated protein  
AUM61876 - Rep CDS  
AUM61876 - Rep CDS  
AUM61876 - Rep Protein  
AUM61876 - Rep Protein  
PKM67799 - CDS  
PKM67799 - CDS  
PKM67799 - replication protein  
PKM67799 - replication protein  
JX904439 (modified) - Replication associated protein translation - Replication associated protein  
AXQ66129 - CDS  
AXQ66129 - CDS  
AXQ66129 - putative viral replication protein  
AXQ66129 - putative viral replication protein  
YP\_009126932 - CDS  
YP\_009126932 - CDS  
YP\_009126932 - replication-associated protein  
YP\_009126932 - replication-associated protein  
OMJ25023 - CDS  
OMJ25023 - CDS  
OMJ25023 - hypothetical protein  
OMJ25023 - hypothetical protein  
AXH77121 - CDS  
AXH77121 - CDS  
AXH77121 - helicase Protein  
AXH77121 - helicase Protein  
JX904407 (modified) - Replication associated protein translation - Replication associated protein  
YP\_009237564 - CDS  
YP\_009237564 - CDS  
YP\_009237564 - replication associated protein  
YP\_009237564 - replication associated protein  
GAC77803 - CDS  
GAC77803 - replication protein  
GAC77803 - CDS  
GAC77803 - replication protein  
AUM62002 - Rep CDS  
AUM62002 - Rep CDS  
AUM62002 - Rep Protein  
AUM62002 - Rep Protein  
AUM61946 - Rep CDS  
AUM61946 - Rep CDS  
AUM61946 - Rep Protein  
AUM61946 - Rep Protein  
YP\_009021888 - CDS  
YP\_009021888 - CDS  
YP\_009021888 - replication associated protein  
YP\_009021888 - replication associated protein  
GAC77860 - CDS  
GAC77860 - CDS  
GAC77860 - replication protein  
GAC77860 - replication protein  
YP\_008052687 - CDS  
YP\_008052687 - CDS  
YP\_008052687 - Rep domain protein  
YP\_008052687 - Rep domain protein  
WP\_027090230 - ATP-dependent Clp protease ATP-binding subunit Protein  
WP\_027090230 - ATP-dependent Clp protease ATP-binding subunit Protein  
JX904139 (modified) - Replication associated protein translation - Replication associated protein  
AEL28813 - CDS  
AEL28813 - CDS  
AEL28813 - replication-associated protein  
AEL28813 - replication-associated protein  
YP\_009126930 - CDS  
YP\_009126930 - CDS

YP\_009126930 - replication-associated protein  
YP\_009126930 - replication-associated protein  
JX904368 (modified) - Replication associated protein translation - Replication associated protein  
AQU117728 - CDS  
AQU117728 - CDS  
AQU117728 - replication protein  
AQU117728 - replication protein  
AXH76906 - CDS  
AXH76906 - CDS  
AXH76906 - putative replicase Protein  
AXH76906 - putative replicase Protein  
KU203356.1 - Replication associated protein translation - Replication associated protein  
KR902498 (modified) - Replication associated protein translation - Replication associated protein  
YP\_009170674 - rep CDS  
YP\_009170674 - rep CDS  
YP\_009170674 - replicase Protein  
YP\_009170674 - replicase Protein  
AMB43004 - CDS  
AMB43004 - CDS  
AMB43004 - putative Rep protein  
AMB43004 - putative Rep protein  
YP\_009126881 - CDS  
YP\_009126881 - CDS  
YP\_009126881 - replication-associated protein  
YP\_009126881 - replication-associated protein  
MF327575.1 - Replication associated protein translation - Replication associated protein  
KM573766 (modified) - Replication associated protein translation - Replication associated protein  
GAC77844 - CDS  
GAC77844 - CDS  
GAC77844 - replication protein  
GAC77844 - replication protein  
AEL87784 - CDS  
AEL87784 - CDS  
AEL87784 - putative replication-associated protein  
AEL87784 - putative replication-associated protein  
CBK25810 - rep CDS  
CBK25810 - rep CDS  
CBK25810 - replication association protein  
CBK25810 - replication association protein  
YP\_009237555 - CDS  
YP\_009237555 - CDS  
YP\_009237555 - replication associated protein  
YP\_009237555 - replication associated protein  
AUM62047 - Rep CDS  
AUM62047 - Rep CDS  
AUM62047 - Rep Protein  
AUM62047 - Rep Protein  
AEL28793 - CDS  
AEL28793 - replication-associated protein  
AEL28793 - CDS  
AEL28793 - replication-associated protein  
YP\_009109670 - CDS  
YP\_009109670 - CDS  
YP\_009109670 - replication-associated protein  
YP\_009109670 - replication-associated protein  
YP\_004376332 - CDS  
YP\_004376332 - CDS  
YP\_004376332 - putative replication protein  
YP\_004376332 - putative replication protein  
JX904250 (modified) - Replication associated protein translation - Replication associated protein  
JX904245 (modified) - Replication associated protein translation - Replication associated protein  
AXH73508 - CDS  
AXH73508 - CDS  
AXH73508 - putative viral replication protein  
AXH73508 - putative viral replication protein  
ALE29827 - CDS  
ALE29827 - CDS  
ALE29827 - replication associated protein  
ALE29827 - replication associated protein  
AGG39817 - CDS  
AGG39817 - CDS  
AGG39817 - replication-associated protein  
AGG39817 - replication-associated protein  
AXH76879 - CDS  
AXH76879 - CDS  
AXH76879 - putative viral replication protein  
AXH76879 - putative viral replication protein  
AMH87735 - CDS  
AMH87735 - CDS  
AMH87735 - replication-associated protein  
AMH87735 - replication-associated protein  
AUF34964 - CDS  
AUF34964 - CDS  
AUF34964 - putative replication-associated protein  
AUF34964 - putative replication-associated protein  
PVV02139 - CDS  
PVV02139 - CDS  
PVV02139 - hypothetical protein  
PVV02139 - hypothetical protein  
AEL28791 - CDS  
AEL28791 - replication-associated protein  
AQU11749 - CDS  
AQU11749 - CDS  
AQU11749 - replication protein  
AQU11749 - replication protein  
YP\_764455 - ORFV1; putative replicase CDS  
YP\_764455 - ORFV1; putative replicase CDS  
YP\_764455 - rep protein  
YP\_764455 - rep protein  
AUM61805 - Rep CDS  
AUM61805 - Rep CDS  
AUM61805 - Rep Protein  
AUM61805 - Rep Protein  
AQU11779 - CDS  
AQU11779 - CDS  
AQU11779 - replication protein

AQU11779 - replication protein  
JX904377 (modified) - Replication associated protein translation - Replication associated protein  
OWF45429 - CDS  
OWF45429 - CDS  
OWF45429 - Master replication protein  
OWF45429 - Master replication protein  
AXH75487 - CDS  
AXH75487 - CDS  
AXH75487 - putative viral replication protein  
AXH75487 - putative viral replication protein  
AXL65927 - CDS  
AXL65927 - CDS  
AXL65927 - replication-associated protein  
AXL65927 - replication-associated protein  
AGA19549 - C1 CDS  
AGA19549 - C1 CDS  
AGA19549 - Rep Protein  
AGA19549 - Rep Protein  
YP\_009109643 - CDS  
YP\_009109643 - CDS  
YP\_009109643 - replication-associated protein  
YP\_009109643 - replication-associated protein  
ATY70087 - Rep CDS  
ATY70087 - Rep CDS  
ATY70087 - replication initiator protein  
ATY70087 - replication initiator protein  
AXL65946 - CDS  
AXL65946 - CDS  
AXL65946 - replication-associated protein  
AXL65946 - replication-associated protein  
ADY62649 - CDS  
ADY62649 - CDS  
ADY62649 - Rep Protein  
ADY62649 - Rep Protein  
AKO63006 - CDS  
AKO63006 - CDS  
AKO63006 - replication-associated protein  
AKO63006 - replication-associated protein  
ACE62799 - rep CDS  
ACE62799 - rep CDS  
ACE62799 - Rep Protein  
ACE62799 - Rep Protein  
ANH56850 - CDS  
ANH56850 - CDS  
ANH56850 - rep protein  
ANH56850 - rep protein  
YP\_009508846 - rep CDS  
YP\_009508846 - rep CDS  
YP\_009508846 - rep protein  
YP\_009508846 - rep protein  
AJE25853 - Rep CDS  
AJE25853 - Rep CDS  
AJE25853 - Rep Protein  
AJE25853 - Rep Protein  
AJF23058 - rep CDS  
AJF23058 - rep CDS  
AJF23058 - rep protein  
AJF23058 - rep protein  
AIF76277 - CDS  
AIF76277 - CDS  
AIF76277 - Rep Protein  
AIF76277 - Rep Protein  
AIW81537 - ORF1 CDS  
AIW81537 - ORF1 CDS  
AIW81537 - replicase protein  
AIW81537 - replicase protein  
YP\_009126879 - CDS  
YP\_009126879 - CDS  
YP\_009126879 - replication-associated protein  
YP\_009126879 - replication-associated protein  
JX904541 (modified) - Replication associated protein translation - Replication associated protein  
KR704912 - Replication associated protein translation - Replication associated protein  
AXH77057 - CDS  
AXH77057 - CDS  
AXH77057 - Rep Protein  
AXH77057 - Rep Protein  
NP\_619761 - putative CDS  
NP\_619761 - putative CDS  
NP\_619761 - virus replication-associated protein  
NP\_619761 - virus replication-associated protein  
JX904559 (modified) - Replication associated protein translation - Replication associated protein  
YP\_009126898 - CDS  
YP\_009126898 - CDS  
YP\_009126898 - replication-associated protein  
YP\_009126898 - replication-associated protein  
AUM61616 - Rep CDS  
AUM61616 - Rep CDS  
AUM61616 - Rep Protein  
AUM61616 - Rep Protein  
MF118167.1 - Replication associated protein translation - Replication associated protein  
YP\_009237554 - CDS  
YP\_009237554 - CDS  
YP\_009237554 - replication associated protein  
YP\_009237554 - replication associated protein  
AJP36430 - CDS  
AJP36430 - CDS  
AJP36430 - replication-associated protein  
AJP36430 - replication-associated protein  
AOV86285 - CDS  
AOV86285 - CDS  
AOV86285 - putative rep protein  
AOV86285 - putative rep protein  
HM228875 (modified) - Replication associated protein translation - Replication associated protein  
YP\_009163920 - CDS  
YP\_009163920 - CDS  
YP\_009163920 - putative spliced replication initiation protein

YP\_009163920 - putative spliced replication initiation protein  
AMD39533 - replication-associated protein  
AMD39533 - replication-associated protein  
AMD39533 - V1 CDS  
AMD39533 - V1 CDS  
JX904107 (modified) - Replication associated protein translation - Replication associated protein  
YP\_009259728 - CDS  
YP\_009259728 - CDS  
YP\_009259728 - putative Rep protein  
YP\_009259728 - putative Rep protein  
AUM62041 - Rep CDS  
AUM62041 - Rep CDS  
AUM62041 - Rep Protein  
AUM62041 - Rep Protein  
YP\_009142778 - putative replication protein  
YP\_009142778 - putative replication protein  
YP\_009142778 - rep CDS  
YP\_009142778 - rep CDS  
KM105952 (modified) - Replication associated protein translation - Replication associated protein  
AXH75991 - CDS  
AXH75991 - CDS  
AXH75991 - putative viral replication protein  
AXH75991 - putative viral replication protein  
AXQ6530 - CDS  
AXQ6530 - CDS  
AXQ6530 - replication protein  
AXQ6530 - replication protein  
EES99438 - CDS  
EES99438 - CDS  
EES99438 - Replicase-associated protein, putative  
EES99438 - Replicase-associated protein, putative  
AUM61662 - Rep CDS  
AUM61662 - Rep CDS  
AUM61662 - Rep Protein  
AUM61662 - Rep Protein  
AGA18245 - CDS  
AGA18245 - CDS  
AGA18245 - hypothetical protein  
AGA18245 - hypothetical protein  
JX904075 (modified) - Replication associated protein translation - Replication associated protein  
AUM61736 - Rep CDS  
AUM61736 - Rep CDS  
AUM61736 - Rep Protein  
AUM61736 - Rep Protein  
AUM61736 - Rep Protein  
AXH77952 - Geminivirus Rep catalytic domain CDS  
AXH77952 - Geminivirus Rep catalytic domain CDS  
AXH77952 - Rep catalytic domain protein  
AXH77952 - Rep catalytic domain protein  
AUM61958 - Rep CDS  
AUM61958 - Rep CDS  
AUM61958 - Rep Protein  
AUM61958 - Rep Protein  
MF118166.1 - Replication associated protein translation - Replication associated protein  
AJD07498 - CDS  
AJD07498 - CDS  
AJD07498 - replication-associated protein  
AJD07498 - replication-associated protein  
AGS47835 - CDS  
AGS47835 - CDS  
AGS47835 - replication-associated protein  
AGS47835 - replication-associated protein  
SCN47931 - Rep CDS  
SCN47931 - Rep CDS  
SCN47931 - Replication initiator protein  
SCN47931 - Replication initiator protein  
AIF76269 - CDS  
AIF76269 - CDS  
AIF76269 - Rep Protein  
AIF76269 - Rep Protein  
AUM61856 - Rep CDS  
AUM61856 - Rep CDS  
AUM61856 - Rep Protein  
AUM61856 - Rep Protein  
AUM61856 - Rep Protein  
KM573767 (modified) - Replication associated protein translation - Replication associated protein  
JF755401 (modified) - Replication associated protein translation - Replication associated protein  
AXH76896 - CDS  
AXH76896 - CDS  
AXH76896 - replication protein  
AXH76896 - replication protein  
AXH73382 - CDS  
AXH73382 - CDS  
AXH73382 - putative viral replication protein  
AXH73382 - putative viral replication protein  
AUM61874 - Rep CDS  
AUM61874 - Rep CDS  
AUM61874 - Rep Protein  
AUM61874 - Rep Protein  
AXH75674 - CDS  
AXH75674 - CDS  
AXH75674 - Rep Protein  
AXH75674 - Rep Protein  
AJD07493 - CDS  
AJD07493 - CDS  
AJD07493 - replication-associated protein  
AJD07493 - replication-associated protein  
APZ87906 - CDS  
APZ87906 - CDS  
APZ87906 - replication-associated protein  
APZ87906 - replication-associated protein  
AJM89742 - CDS  
AJM89742 - CDS  
AJM89742 - replication associated protein  
AJM89742 - replication associated protein  
AQR57902 - Rep CDS  
AQR57902 - Rep CDS  
AQR57902 - replicase Protein

AQR57902 - replicase Protein  
AXH73061 - CDS  
AXH73061 - CDS  
AXH73061 - putative viral replication protein  
AXH73061 - putative viral replication protein  
AUM61773 - Rep CDS  
AUM61773 - Rep CDS  
AUM61773 - Rep Protein  
AUM61773 - Rep Protein  
AXH73290 - CDS  
AXH73290 - CDS  
AXH73290 - putative viral replication protein  
AXH73290 - putative viral replication protein  
AXH75836 - CDS  
AXH75836 - CDS  
AXH75836 - replication-associated protein  
AXH75836 - replication-associated protein  
KM573773 (modified) - Replication associated protein translation - Replication associated protein  
APA62657 - CDS  
APA62657 - CDS  
APA62657 - putative replication protein  
APA62657 - putative replication protein  
YP\_009116902 - CDS  
YP\_009116902 - CDS  
YP\_009116902 - replication-associated protein  
YP\_009116902 - replication-associated protein  
JF713717 (modified) - unknown CDS translation 3 - unknown CDS  
AIF34798 - CDS  
AIF34798 - CDS  
AIF34798 - replication-associated protein  
AIF34798 - replication-associated protein  
MF327573.1 - Replication associated protein translation - Replication associated protein  
JX904344 (modified) - Replication associated protein translation - Replication associated protein  
APA62647 - CDS  
APA62647 - CDS  
APA62647 - putative replication protein  
APA62647 - putative replication protein  
AUM61894 - Rep CDS  
AUM61894 - Rep CDS  
AUM61894 - Rep Protein  
AUM61894 - Rep Protein  
AUM61960 - Rep CDS  
AUM61960 - Rep CDS  
AUM61960 - Rep Protein  
AUM61960 - Rep Protein  
KU203352.1 - Replication associated protein translation - Replication associated protein  
JF755410 (modified) - Replication associated protein translation - Replication associated protein  
APC94137 - putative replication-associated protein  
APC94137 - putative replication-associated protein  
APC94137 - similar to YP\_009126890.1 CDS  
APC94137 - similar to YP\_009126890.1 CDS  
KM573776 (modified) - Replication associated protein translation - Replication associated protein  
YP\_009237578 - CDS  
YP\_009237578 - CDS  
YP\_009237578 - replication associated protein  
YP\_009237578 - replication associated protein  
AEM05804 - CDS  
AEM05804 - CDS  
AEM05804 - REP Protein  
AEM05804 - REP Protein  
JF755409 (modified) - Replication associated protein translation - Replication associated protein  
AXL65944 - CDS  
AXL65944 - CDS  
AXL65944 - replication-associated protein  
AXL65944 - replication-associated protein  
YP\_009259737 - CDS  
YP\_009259737 - CDS  
YP\_009259737 - putative Rep protein  
YP\_009259737 - putative Rep protein  
GAC77783 - CDS  
GAC77783 - CDS  
GAC77783 - replication protein  
GAC77783 - replication protein  
AGA18448 - CDS  
AGA18448 - CDS  
AGA18448 - hypothetical protein  
AGA18448 - hypothetical protein  
JX904581 (modified) - Replication associated protein translation - Replication associated protein  
YP\_009126925 - CDS  
YP\_009126925 - CDS  
YP\_009126925 - replication-associated protein  
YP\_009126925 - replication-associated protein  
YP\_009109675 - CDS  
YP\_009109675 - CDS  
YP\_009109675 - replication-associated protein  
YP\_009109675 - replication-associated protein  
YP\_006281010 - CDS  
YP\_006281010 - CDS  
YP\_006281010 - putative viral replication protein  
YP\_006281010 - putative viral replication protein  
AXH75780 - CDS  
AXH75780 - CDS  
AXH75780 - replication-associated protein  
AXH75780 - replication-associated protein  
AXH73792 - CDS  
AXH73792 - CDS  
AXH73792 - putative viral replication protein  
AXH73792 - putative viral replication protein  
AHC72271 - M-Rep CDS  
AHC72271 - M-Rep CDS  
AHC72271 - master replication initiator protein  
AHC72271 - master replication initiator protein  
YP\_008997794 - M-Rep CDS  
YP\_008997794 - M-Rep CDS

YP\_008997794 - master replication initiator protein  
YP\_008997794 - master replication initiator protein  
YP\_009126890 - CDS  
YP\_009126890 - CDS  
YP\_009126890 - replication-associated protein  
YP\_009126890 - replication-associated protein  
AOV86255 - CDS  
AOV86255 - CDS  
AOV86255 - putative rep protein  
AOV86255 - putative rep protein  
AUM61787 - Rep CDS  
AUM61787 - Rep CDS  
AUM61787 - Rep Protein  
AUM61787 - Rep Protein  
YP\_009506291 - CDS  
YP\_009506291 - CDS  
YP\_009506291 - Rep Protein  
YP\_009506291 - Rep Protein  
AUM61801 - Rep CDS  
AUM61801 - Rep CDS  
AUM61801 - Rep Protein  
AUM61801 - Rep Protein  
MF118169.1 - Replication associated protein translation - Replication associated protein  
JF755408 (modified) - Replication associated protein translation - Replication associated protein  
AXQ65661 - CDS  
AXQ65661 - CDS  
AXQ65661 - putative viral replication protein  
AXQ65661 - putative viral replication protein  
YP\_009508165 - V2 CDS  
YP\_009508165 - V2 CDS  
YP\_009508165 - V2 Protein  
YP\_009508165 - V2 Protein  
KM573765 (modified) - Replication associated protein translation - Replication associated protein  
YP\_009116906 - CDS  
YP\_009116906 - CDS  
YP\_009116906 - replication-associated protein  
YP\_009116906 - replication-associated protein  
AXH73393 - CDS  
AXH73393 - CDS  
AXH73393 - putative viral replication protein  
AXH73393 - putative viral replication protein  
AXH76040 - CDS  
AXH76040 - CDS  
AXH76040 - putative viral replication protein  
AXH76040 - putative viral replication protein  
JX904401 (modified) - Replication associated protein translation - Replication associated protein  
JX904192 (modified) - Replication associated protein translation - Replication associated protein  
MF118168.1 - Replication associated protein translation - Replication associated protein  
JX904412 (modified) - Replication associated protein translation - Replication associated protein  
AXH77580 - CDS  
AXH77580 - CDS  
AXH77580 - replication protein  
AXH77580 - replication protein  
AXH77287 - CDS  
AXH77287 - CDS  
AXH77287 - Rep Protein  
AXH77287 - Rep Protein  
AXH78100 - CDS  
AXH78100 - CDS  
AXH78100 - helicase Protein  
AXH78100 - helicase Protein  
JF755416 (modified) - Replication associated protein interval 1 translation - Replication associated protein  
JF755417 (modified) - Replication associated protein interval 1 translation - Replication associated protein  
YP\_009237571 - CDS  
YP\_009237571 - CDS  
YP\_009237571 - replication associated protein  
YP\_009237571 - replication associated protein  
AXH75489 - CDS  
AXH75489 - CDS  
AXH75489 - replication-associated protein  
AXH75489 - replication-associated protein  
JX904395 (modified) - Replication associated protein translation - Replication associated protein  
AQU11729 - CDS  
AQU11729 - replication protein  
AQU11729 - CDS  
AQU11729 - replication protein  
AQU11743 - CDS  
AQU11743 - CDS  
AQU11743 - replication protein  
AQU11743 - replication protein  
AXH74669 - CDS  
AXH74669 - CDS  
AXH74669 - replication protein  
AXH74669 - replication protein  
YP\_009115538 - CDS  
YP\_009115538 - CDS  
YP\_009115538 - replication-associated protein  
YP\_009115538 - replication-associated protein  
AXH77740 - CDS  
AXH77740 - CDS  
AXH77740 - putative viral replication protein  
AXH77740 - putative viral replication protein  
AUM61811 - Rep CDS  
AUM61811 - Rep CDS  
AUM61811 - Rep Protein  
AUM61811 - Rep Protein  
YP\_009237516 - CDS  
YP\_009237516 - CDS  
YP\_009237516 - replication associated protein  
YP\_009237516 - replication associated protein  
AUM61707 - Rep CDS  
AUM61707 - Rep CDS  
AUM61707 - Rep Protein

AUM61707 - Rep Protein  
 AUM61940 - Rep CDS  
 AUM61940 - Rep CDS  
 AUM61940 - Rep Protein  
 AUM61940 - Rep Protein  
 AJF23074 - rep CDS  
 AJF23074 - rep CDS  
 AJF23074 - rep protein  
 AJF23074 - rep protein  
 AJF23080 - rep CDS  
 AJF23080 - rep CDS  
 AJF23080 - rep protein  
 AJF23080 - rep protein  
 YP\_009226567 - CDS  
 YP\_009226567 - CDS  
 YP\_009226567 - replication-associated protein  
 YP\_009226567 - replication-associated protein  
 AUM61730 - Rep CDS  
 AUM61730 - Rep CDS  
 AUM61730 - Rep Protein  
 AUM61730 - Rep Protein  
 AJD20393 - CDS  
 AJD20393 - CDS  
 AJD20393 - replication associated protein  
 AJD20393 - replication associated protein  
 JF755415 (modified) - Replication associated protein  
 interval 1 translation - Replication associated protein  
 AXQ65784 - CDS  
 AXQ65784 - CDS  
 AXQ65784 - replication associated protein  
 AXQ65784 - replication associated protein  
 AUM61795 - Rep CDS  
 AUM61795 - Rep CDS  
 AUM61795 - Rep Protein  
 AUM61795 - Rep Protein  
 ARD71303 - putative replication initiator protein  
 ARD71303 - putative replication initiator protein  
 ARD71303 - Rep CDS  
 ARD71303 - Rep CDS  
 AXH73056 - CDS  
 AXH73056 - CDS  
 AXH73056 - putative viral replication protein  
 AXH73056 - putative viral replication protein  
 AIX11626 - Rep CDS  
 AIX11626 - Rep CDS  
 AIX11626 - replicase Protein  
 AIX11626 - replicase Protein  
 APG55798 - CDS  
 APG55798 - CDS  
 APG55798 - Rep Protein  
 APG55798 - Rep Protein  
 AHB63242 - CDS  
 AHB63242 - CDS  
 AHB63242 - replication associated protein  
 AHB63242 - replication associated protein  
 JX904561 (modified) - Replication associated protein  
 translation - Replication associated protein  
 AXH76632 - CDS  
 AXH76632 - CDS  
 AXH76632 - helicase Protein  
 AXH76632 - helicase Protein  
 JF755402 (modified) - Replication associated protein  
 translation - Replication associated protein  
 JF755403 (modified) - Replication associated protein  
 translation - Replication associated protein  
 KM573763 (modified) - Replication associated protein  
 translation - Replication associated protein  
 KM573764 (modified) - Replication associated protein  
 translation - Replication associated protein  
 AOV86329 - CDS  
 AOV86329 - CDS  
 AOV86329 - putative rep protein  
 AOV86329 - putative rep protein  
 YP\_003084282 - CDS  
 YP\_003084282 - CDS  
 YP\_003084282 - putative Rep protein  
 YP\_003084282 - putative Rep protein  
 JX904312 (modified) - Replication associated protein  
 translation - Replication associated protein  
 AXH77906 - CDS  
 AXH77906 - CDS  
 AXH77906 - replication protein  
 AXH77906 - replication protein  
 AXH74257 - CDS  
 AXH74257 - CDS  
 AXH74257 - replication associated protein  
 AXH74257 - replication associated protein  
 AWW06057 - CDS  
 AWW06057 - CDS  
 AWW06057 - helicase Protein  
 AWW06057 - helicase Protein  
 AQU11773 - CDS  
 AQU11773 - CDS  
 AQU11773 - replication protein  
 AQU11773 - replication protein  
 AQU11776 - CDS  
 AQU11776 - CDS  
 AQU11776 - replication protein  
 AQU11776 - replication protein  
 AXH74332 - CDS  
 AXH74332 - CDS  
 AXH74332 - replication-associated protein  
 AXH74332 - replication-associated protein  
 AUM61906 - Rep CDS  
 AUM61906 - Rep CDS  
 AUM61906 - Rep Protein  
 AUM61906 - Rep Protein  
 YP\_009237586 - CDS  
 YP\_009237586 - CDS  
 YP\_009237586 - replication associated protein  
 YP\_009237586 - replication associated protein  
 JX559621 (modified) - hypothetical protein CDS translation  
 2 - hypothetical protein CDS  
 JX559622 (modified) - hypothetical protein CDS translation  
 2 - hypothetical protein CDS  
 YP\_009163927 - CDS  
 YP\_009163927 - CDS  
 YP\_009163927 - putative replication initiation protein  
 YP\_009163927 - putative replication initiation protein  
 JX904478 (modified) - Replication associated protein  
 translation - Replication associated protein  
 AXH76508 - CDS  
 AXH76508 - CDS  
 AXH76508 - helicase Protein  
 AXH76508 - helicase Protein  
 AXH77564 - CDS  
 AXH77564 - CDS  
 AXH77564 - putative viral replication protein  
 AXH77564 - putative viral replication protein  
 JX904416 (modified) - Replication associated protein  
 translation - Replication associated protein  
 YP\_009051960 - CDS  
 YP\_009051960 - CDS  
 YP\_009051960 - replication-associated protein  
 YP\_009051960 - replication-associated protein  
 KJ206566 (modified) - Replication associated protein  
 translation - Replication associated protein  
 YP\_009237541 - CDS  
 YP\_009237541 - CDS  
 YP\_009237541 - replication associated protein  
 YP\_009237541 - replication associated protein  
 WP\_027090230 - other interval 3  
 YP\_009237578 - other interval 3  
 AIF76278 - CDS  
 AIF76278 - Rep Protein  
 YP\_009237578 - Walker A motif  
 YP\_009237578 - other interval 1  
 YP\_009237578 - CDS  
 YP\_009237578 - replication associated protein  
 YP\_009237578 - RNA helicase  
 WP\_027090230 - Walker A motif  
 WP\_027090230 - other interval 1  
 WP\_027090230 - P-loop NTPase  
 WP\_027090230 - AAA  
 WP\_027090230 - ATP-dependent Clp protease ATP-binding subunit Protein  
 WP\_027090230 - P-loop NTPase  
 YP\_009237554 - CDS  
 YP\_009237554 - Gemini AL1  
 YP\_009237554 - replication associated protein  
 WP\_027090230 - AAA  
 WP\_027090230 - arginine finger  
 WP\_027090230 - ATP-dependent Clp protease ATP-binding subunit Protein  
 WP\_027090230 - P-loop NTPase  
 AIF34798 - CDS  
 AIF34798 - replication-associated protein  
 AIF34798 - Viral Rep  
 AGA18393 - CDS  
 AGA18393 - hypothetical protein  
 AGA18393 - Viral Rep  
 AXH76451 - CDS  
 AXH76451 - helicase Protein  
 AXH76451 - Viral Rep  
 YP\_009226567 - CDS  
 YP\_009226567 - replication-associated protein  
 YP\_009226567 - Viral Rep  
 AQU11736 - CDS  
 AQU11736 - replication protein  
 AQU11736 - Viral Rep  
 AGA18448 - CDS  
 AGA18448 - hypothetical protein  
 AGA18448 - Viral Rep  
 AQU11717 - CDS  
 AQU11724 - CDS  
 AQU11717 - replication protein  
 AQU11724 - replication protein  
 AQU11717 - Viral Rep  
 AQU11724 - Viral Rep  
 AXH76508 - CDS  
 AXH76508 - helicase Protein  
 AXH76508 - Viral Rep  
 AIF34812 - CDS  
 AIF34812 - Gemini AL1  
 AIF34812 - replication-associated protein  
 AJP36430 - CDS  
 AJP36430 - replication-associated protein  
 AJP36430 - Viral Rep  
 AQU11726 - CDS  
 AQU11726 - replication protein  
 AQU11726 - Viral Rep  
 YP\_009237541 - AAA  
 YP\_009237541 - CDS  
 YP\_009237541 - replication associated protein  
 YP\_009448204 - rep CDS  
 YP\_009448204 - rolling-circle replication protein  
 YP\_009448204 - Viral Rep  
 YP\_009126925 - CDS  
 YP\_009126925 - replication-associated protein  
 YP\_009126925 - Viral Rep  
 YP\_009115538 - CDS  
 YP\_009115538 - replication-associated protein  
 YP\_009115538 - Viral Rep  
 AGA18286 - CDS  
 AGA18286 - hypothetical protein  
 AGA18286 - Viral Rep  
 YP\_009237541 - CDS  
 YP\_009237541 - replication associated protein  
 YP\_009237541 - Viral Rep  
 AKO84203 - CDS  
 AKO84203 - replicase Protein  
 AKO84203 - Viral Rep  
 YP\_009170674 - rep CDS  
 YP\_009170674 - replicase Protein  
 YP\_009170674 - Viral Rep  
 ADY62649 - CDS  
 ADY62649 - Rep Protein  
 ADY62649 - Viral Rep  
 AHB63242 - CDS  
 AHB63242 - replication associated protein  
 AHB63242 - Viral Rep  
 YP\_009126938 - CDS  
 YP\_009126938 - replication-associated protein  
 YP\_009126938 - Viral Rep  
 AXH76879 - CDS  
 AXH76879 - putative viral replication protein  
 AXH76879 - Viral Rep  
 AIF76269 - CDS  
 AIF76269 - Rep Protein  
 AIF76269 - Viral Rep  
 AXH77740 - CDS  
 AXH77740 - putative viral replication protein  
 AXH77740 - Viral Rep  
 AVA16977 - replicase-associated protein  
 AVA16977 - start codon not determined CDS  
 AVA16977 - Viral Rep  
 AVV68420 - CDS  
 AVV68420 - replication-associated protein  
 AVV68420 - Viral Rep  
 AVA17000 - replicase-associated protein  
 AVA17000 - start codon not determined CDS  
 AVA17000 - Viral Rep  
 AVA16996 - replicase-associated protein  
 AVA16996 - start codon not determined CDS  
 AVA16996 - Viral Rep  
 ATD53351 - ORF1 CDS  
 ATD53351 - Rep Protein  
 AVA16998 - replicase-associated protein  
 AVA16998 - start codon not determined CDS  
 ATD53351 - Viral Rep  
 AVA16998 - Viral Rep  
 AWB80902 - Rep CDS  
 AWB80902 - replicase protein  
 AWB80902 - Viral Rep  
 YP\_008052687 - CDS  
 YP\_008052687 - Rep domain protein  
 YP\_008052687 - Viral Rep  
 ADC79191 - CDS  
 ADC79191 - V1 Protein  
 ADC79191 - Viral Rep  
 YP\_009021888 - CDS  
 YP\_009021888 - replication associated protein  
 YP\_009021888 - Viral Rep  
 AUT13975 - CDS  
 AUT13975 - replication protein  
 AUT13975 - Viral Rep  
 AIW81537 - ORF1 CDS  
 ACE62799 - rep CDS  
 ACE62799 - Rep Protein  
 AIW81537 - replicase protein  
 ACE62799 - Viral Rep  
 AIW81537 - Viral Rep  
 JX305991 (modified) - hypothetical protein CDS interval 2  
 translation - hypothetical protein CDS  
 JX305993 (modified) - hypothetical protein CDS interval 2  
 translation - hypothetical protein CDS  
 JX305994 (modified) - hypothetical protein CDS interval 2  
 translation - hypothetical protein CDS  
 JX305995 (modified) - hypothetical protein CDS interval 2  
 translation - hypothetical protein CDS  
 JX305996 (modified) - hypothetical protein CDS interval 2  
 translation - hypothetical protein CDS  
 JX305997 (modified) - hypothetical protein CDS interval 2  
 translation - hypothetical protein CDS  
 JX305998 (modified) - hypothetical protein CDS interval 2  
 translation - hypothetical protein CDS  
 JX305992 (modified) - hypothetical protein CDS interval 2  
 translation - hypothetical protein CDS  
 JQ023166 (modified) - hypothetical protein CDS interval 2  
 translation - hypothetical protein CDS  
 AEL22996 - CDS  
 YP\_004778177 - CDS  
 AEL22996 - Rep protein  
 YP\_004778177 - Rep protein  
 AEL22996 - Viral Rep  
 YP\_004778177 - Viral Rep  
 AXH73508 - CDS  
 AXH73508 - putative viral replication protein  
 AXH73508 - Viral Rep  
 AXH75487 - CDS  
 AXH75487 - putative viral replication protein  
 AXH75487 - Viral Rep  
 AXH76667 - CDS  
 AXH76667 - putative viral replication protein  
 AXH76667 - Viral Rep  
 AQU11728 - CDS  
 AQU11728 - replication protein  
 AQU11728 - Viral Rep  
 AXH74936 - CDS  
 AXH74936 - putative viral replication protein  
 AXH74936 - Viral Rep  
 ARO38300 - Rep CDS  
 ARO38300 - replicase Protein  
 ARO38300 - Viral Rep  
 YP\_009116906 - CDS  
 YP\_009116906 - replication-associated protein  
 YP\_009116906 - Viral Rep  
 AXH73393 - CDS  
 AXH76040 - CDS  
 AXH73393 - putative viral replication protein  
 AXH76040 - putative viral replication protein  
 AXH73393 - Viral Rep  
 AXH76040 - Viral Rep  
 AIF76255 - CDS  
 AIF76255 - Rep Protein  
 AIF76255 - Viral Rep  
 YP\_009237516 - CDS  
 YP\_009237516 - replication associated protein  
 YP\_009237516 - Viral Rep

ALE29847 - CDS  
 YP\_009001747 - CDS  
 ALE29847 - replication associated protein  
 YP\_009001747 - replication-associated protein  
 ALE29847 - Viral Rep  
 YP\_009001747 - Viral Rep  
 YP\_009237564 - CDS  
 YP\_009237564 - replication associated protein  
 YP\_009237564 - Viral Rep  
 ADJ07478 - CDS  
 ADJ07478 - replication-associated protein  
 ADJ07478 - Viral Rep  
 ALE29688 - CDS  
 YP\_009001742 - CDS  
 ALE29688 - replication associated protein  
 YP\_009001742 - replication-associated protein  
 ALE29688 - Viral Rep  
 YP\_009001742 - Viral Rep  
 YP\_009237586 - CDS  
 YP\_009237586 - replication associated protein  
 YP\_009237586 - Viral Rep  
 AMH87735 - CDS  
 AMH87735 - replication-associated protein  
 AMH87735 - Viral Rep  
 AXH73382 - CDS  
 AXH73382 - putative viral replication protein  
 AXH73382 - Viral Rep  
 ARE67375 - SWPV2-147 CDS  
 ARE67375 - SWPV2-ORF147 Protein  
 ARE67375 - Viral Rep  
 NP\_955176 - CDS  
 NP\_955176 - Rep-like protein  
 NP\_955176 - Viral Rep  
 AKR53286 - CDS  
 AKR53286 - Viral Rep  
 AKR53286 - viral replicase protein  
 AGA18388 - CDS  
 AGA18388 - hypothetical protein  
 AGA18388 - Viral Rep  
 YP\_009126890 - CDS  
 YP\_009126890 - replication-associated protein  
 YP\_009126890 - Viral Rep  
 AGA18473 - CDS  
 AGA18473 - hypothetical protein  
 AGA18473 - Viral Rep  
 AGS47835 - CDS  
 AGS47835 - replication-associated protein  
 AGS47835 - Viral Rep  
 YP\_009109670 - CDS  
 YP\_009109670 - replication-associated protein  
 YP\_009109670 - Viral Rep  
 AQR57898 - Rep CDS  
 AQR57898 - replicase Protein  
 AQR57898 - Viral Rep  
 AGA18245 - CDS  
 AGA18245 - hypothetical protein  
 AGA18245 - Viral Rep  
 AQR57902 - Rep CDS  
 AQR57902 - replicase Protein  
 AQR57902 - Viral Rep  
 AXH73061 - CDS  
 AXH73061 - putative viral replication protein  
 AXH73061 - Viral Rep  
 NP\_619761 - putative CDS  
 NP\_619761 - Viral Rep  
 NP\_619761 - virus replication-associated protein  
 YP\_009237578 - CDS  
 YP\_009237578 - replication associated protein  
 YP\_009237578 - Viral Rep  
 AQU11729 - CDS  
 AQU11729 - replication protein  
 AQU11729 - Viral Rep  
 ADJ07493 - CDS  
 ADJ07493 - replication-associated protein  
 ADJ07493 - Viral Rep  
 KM972725 (modified) - Replication associated protein  
 interval 2 translation - Replication associated protein  
 KM972726 (modified) - Replication associated protein  
 interval 2 translation - Replication associated protein  
 AQU11726 - CDS  
 AQU11726 - P-loop NTPase  
 AQU11726 - replication protein  
 AVV68420 - CDS  
 AVA16977 - replicase-associated protein  
 AVV68420 - replication-associated protein  
 AVA16977 - RNA helicase  
 AVV68420 - RNA helicase  
 AVA16977 - start codon not determined CDS  
 AVH76405 - CDS  
 AVH76405 - putative Rep Protein  
 AVH76405 - Viral Rep  
 YP\_009163920 - CDS  
 YP\_009163920 - P-loop NTPase  
 YP\_009163920 - putative spliced replication initiation  
 protein  
 ARD71303 - P-loop NTPase  
 ARD71303 - putative replication initiator protein  
 ARD71303 - Rep CDS  
 AIF34818 - CDS  
 AIF34818 - P-loop NTPase  
 AIF34818 - replication-associated protein  
 AXH73508 - CDS  
 AXH73508 - putative viral replication protein  
 AXH73508 - RNA helicase  
 AXG50856 - M-Rep CDS  
 AXG50856 - master replication initiator protein  
 AXG50856 - Viral Rep  
 AHC72271 - M-Rep CDS  
 AHC72271 - master replication initiator protein  
 AHC72271 - Viral Rep  
 YP\_008997794 - M-Rep CDS  
 YP\_008997794 - master replication initiator protein  
 YP\_008997794 - Viral Rep  
 AHC72167 - M-Rep CDS  
 AHC72167 - master replication initiator protein  
 AHC72167 - Viral Rep  
 AHC72177 - M-Rep CDS  
 AHC72177 - master replication initiator protein  
 AHC72177 - Viral Rep  
 WP\_027090230 - P-loop NTPase  
 WP\_027090230 - P-loop NTPase  
 WP\_027090230 - AAA  
 WP\_027090230 - ATP-dependent Clp protease ATP-  
 binding subunit Protein  
 WP\_027090230 - P-loop NTPase  
 WP\_027090230 - AAA  
 WP\_027090230 - ATP-dependent Clp protease ATP-  
 binding subunit Protein  
 WP\_027090230 - P-loop NTPase  
 AXH76632 - CDS  
 AXH76632 - helicase Protein  
 AXH76632 - P-loop NTPase  
 ACE62799 - rep CDS  
 ACE62799 - Rep Protein  
 ACE62799 - RNA helicase  
 AHB63242 - CDS  
 AHB63242 - replication associated protein  
 AHB63242 - RNA helicase  
 ADY62649 - CDS  
 ADY62649 - Rep Protein  
 ADY62649 - RNA helicase  
 ARE68406 - CDS  
 ARE68406 - replication associated protein  
 ARE68406 - RNA helicase  
 YP\_004376332 - CDS  
 YP\_004376332 - putative replication protein  
 YP\_004376332 - Viral Rep  
 YP\_009163936 - CDS  
 YP\_009163936 - putative replication initiation protein  
 YP\_009163936 - Viral Rep  
 ATY42470 - CDS  
 ATY42470 - putative replication associated protein  
 ATY42470 - RNA helicase  
 AIL50149 - CDS  
 AIL50149 - replicase Protein  
 AIL50149 - RNA helicase  
 AVT56110 - CDS  
 AVT56110 - replicase Protein  
 AVT56110 - RNA helicase  
 ADC79191 - CDS  
 ADC79191 - P-loop NTPase  
 ADC79191 - V1 Protein  
 AKO84203 - CDS  
 AKO84203 - replicase Protein  
 AKO84203 - RNA helicase  
 YP\_009237578 - CDS  
 YP\_009237578 - replication associated protein  
 YP\_009237578 - RNA helicase  
 YP\_009237578 - Walker B motif  
 YP\_009051960 - CDS  
 YP\_009051960 - P-loop NTPase  
 YP\_009051960 - replication-associated protein  
 APG55798 - CDS  
 APG55798 - P-loop NTPase  
 APG55798 - Rep Protein  
 APZ87906 - CDS  
 APZ87906 - replication-associated protein  
 APZ87906 - RNA helicase  
 AFH02742 - CDS  
 AFH02742 - putative Rep Protein  
 AFH02742 - Viral Rep  
 AEL28813 - CDS  
 AEL28813 - replication-associated protein  
 AEL28813 - Viral Rep  
 AXH74140 - CDS  
 AXH74140 - helicase Protein  
 AXH74140 - Viral Rep  
 AVA16977 - replicase-associated protein  
 AVA16977 - start codon not determined CDS  
 AVV68420 - CDS  
 AVV68420 - replication-associated protein  
 AVA17000 - replicase-associated protein  
 AVA17000 - start codon not determined CDS  
 AVA16996 - replicase-associated protein  
 AVA16996 - start codon not determined CDS  
 ATD53351 - ORF1 CDS  
 ATD53351 - Rep Protein  
 AVA16998 - replicase-associated protein  
 AVA16998 - start codon not determined CDS  
 AWB80902 - Rep CDS  
 AWB80902 - replicase protein  
 YP\_009458619 - rep CDS  
 YP\_009458619 - replication-association protein  
 YP\_009458619 - Viral Rep  
 BAP81877 - Rep CDS  
 BAP81877 - rolling circle replication initiator protein  
 BAP81877 - Viral Rep  
 APZ87906 - CDS  
 APZ87906 - replication-associated protein  
 APZ87906 - Viral Rep  
 AVT56110 - CDS  
 AVT56110 - replicase Protein  
 AVT56110 - Viral Rep  
 AIL50149 - CDS  
 AIL50149 - replicase Protein  
 AIL50149 - Viral Rep  
 ATY42470 - CDS  
 ATY42470 - putative replication associated protein  
 ATY42470 - Viral Rep  
 AKO71368 - CDS  
 AKO71368 - Replication associated protein  
 AKO71368 - Viral Rep  
 ALA65733 - CDS  
 ALA65733 - replication initiation protein  
 ALA65733 - Viral Rep  
 AIF76278 - CDS  
 AIF76278 - Rep Protein  
 AIF76278 - RNA helicase  
 YP\_009126925 - CDS  
 YP\_009126925 - replication-associated protein  
 YP\_009126925 - RNA helicase  
 YP\_009109643 - CDS  
 YP\_009109643 - P-loop NTPase  
 YP\_009109643 - replication-associated protein  
 AXH74443 - CDS  
 AXH74443 - putative viral replication protein  
 AXH74443 - RNA helicase  
 AQU11749 - CDS  
 AQU11749 - replication protein  
 AQU11749 - RNA helicase  
 YP\_009126932 - CDS  
 YP\_009126932 - P-loop NTPase  
 YP\_009126932 - replication-associated protein  
 AXH73382 - CDS  
 AXH73382 - P-loop NTPase  
 AXH73382 - putative viral replication protein  
 YP\_009126898 - CDS  
 YP\_009126898 - P-loop NTPase  
 YP\_009126898 - replication-associated protein  
 AWB80902 - P-loop NTPase  
 AWB80902 - Rep CDS  
 AWB80902 - replicase protein  
 ATD53351 - ORF1 CDS  
 ATD53351 - Rep Protein  
 AVA16996 - replicase-associated protein  
 AVA16998 - replicase-associated protein  
 AVA17000 - replicase-associated protein  
 ATD53351 - RNA helicase  
 AVA16996 - RNA helicase  
 AVA16998 - RNA helicase  
 AVA17000 - RNA helicase  
 AVA16996 - start codon not determined CDS  
 AVA16998 - start codon not determined CDS  
 AVA17000 - start codon not determined CDS  
 YP\_004376332 - CDS  
 YP\_004376332 - putative replication protein  
 YP\_004376332 - RNA helicase  
 ATY70087 - Rep CDS  
 ATY70087 - replication initiator protein  
 ATY70087 - Viral Rep  
 YP\_003084282 - CDS  
 YP\_003084282 - putative Rep protein  
 YP\_003084282 - Viral Rep  
 AXH77564 - CDS  
 AXH77564 - putative viral replication protein  
 AXH77564 - Viral Rep  
 CBK25810 - rep CDS  
 CBK25810 - replication association protein  
 CBK25810 - Viral Rep  
 AQU11776 - CDS  
 AQU11776 - replication protein  
 AQU11776 - Viral Rep  
 AQU11773 - CDS  
 AQU11773 - replication protein  
 AQU11773 - Viral Rep  
 AEI54346 - CDS  
 AEI54346 - rep protein  
 AEI54346 - Viral Rep  
 AGA18409 - CDS  
 AGA18409 - hypothetical protein  
 AGA18409 - Viral Rep  
 AXH75991 - CDS  
 AXH75991 - putative viral replication protein  
 AXH75991 - Viral Rep  
 YP\_009163927 - CDS  
 YP\_009163927 - putative replication initiation protein  
 YP\_009163927 - Viral Rep  
 AEM05804 - CDS  
 AEM05804 - REP Protein  
 AEM05804 - Viral Rep  
 AXH74683 - CDS  
 AXH74683 - putative viral replication protein  
 AXH74683 - Viral Rep  
 AXH76451 - CDS  
 AXH76451 - helicase Protein  
 AXH76451 - RNA helicase  
 AGA18245 - CDS  
 AGA18245 - hypothetical protein  
 AGA18245 - RNA helicase  
 YP\_009021888 - CDS  
 YP\_009021888 - P-loop NTPase  
 YP\_009021888 - replication associated protein  
 ALE29635 - CDS  
 ALE29635 - replication associated protein  
 ALE29635 - RNA helicase  
 YP\_009237530 - CDS  
 YP\_009237530 - replication associated protein  
 YP\_009237530 - RNA helicase  
 YP\_009115538 - CDS  
 YP\_009115538 - P-loop NTPase  
 YP\_009115538 - replication-associated protein  
 AWW06057 - CDS  
 AWW06057 - helicase Protein  
 AWW06057 - RNA helicase  
 AGA18441 - CDS  
 AGA18441 - hypothetical protein  
 AGA18441 - P-loop NTPase  
 YP\_009116906 - CDS  
 YP\_009116906 - P-loop NTPase  
 YP\_009116906 - replication-associated protein  
 AGA18448 - CDS  
 AGA18448 - hypothetical protein  
 AGA18448 - RNA helicase  
 AMH87735 - CDS  
 AMH87735 - P-loop NTPase  
 AMH87735 - replication-associated protein  
 YP\_009126890 - CDS  
 YP\_009126890 - replication-associated protein  
 YP\_009126890 - RNA helicase

AXH76508 - CDS  
 AXH76508 - helicase Protein  
 AXH76508 - RNA helicase  
 AXH73061 - TIP49  
 AXH73061 - CDS  
 AXH73061 - putative viral replication protein  
 AXH73061 - RNA helicase  
 YP\_009163927 - CDS  
 YP\_009163927 - P-loop NTPase  
 YP\_009163927 - putative replication initiation protein  
 AXH75991 - CDS  
 AXH75991 - P-loop NTPase  
 AXH75991 - putative viral replication protein  
 AQR57898 - P-loop NTPase  
 AQR57898 - Rep CDS  
 AQR57898 - replicase Protein  
 ARO38300 - P-loop NTPase  
 ARO38300 - Rep CDS  
 ARO38300 - replicase Protein  
 AIF76269 - CDS  
 AIF76269 - P-loop NTPase  
 AIF76269 - Rep Protein  
 YP\_009126879 - CDS  
 YP\_009126879 - P-loop NTPase  
 YP\_009126879 - replication-associated protein  
 YP\_009116902 - CDS  
 YP\_009116902 - P-loop NTPase  
 YP\_009116902 - replication-associated protein  
 YP\_009109675 - CDS  
 YP\_009109675 - P-loop NTPase  
 YP\_009109675 - replication-associated protein  
 AIF34802 - CDS  
 AIF34802 - P-loop NTPase  
 AIF34802 - replication-associated protein  
 AJD20393 - CDS  
 AJD20393 - Gemini AL1 M  
 AJD20393 - replication associated protein  
 YP\_006281010 - CDS  
 YP\_006281010 - P-loop NTPase  
 YP\_006281010 - putative viral replication protein  
 AVH76405 - CDS  
 AVH76405 - Parvo NS1  
 AVH76405 - putative Rep Protein  
 AVH76405 - RNA helicase  
 KT945154 (modified) - Hypothetical 2 translation - Hypothetical 2  
 AXH76879 - CDS  
 AXH76879 - P-loop NTPase  
 AXH76879 - putative viral replication protein  
 ALE29847 - CDS  
 ALE29847 - replication associated protein  
 ALE29847 - RNA helicase  
 YP\_009001747 - CDS  
 YP\_009001747 - replication-associated protein  
 YP\_009001747 - RNA helicase  
 AQU11773 - CDS  
 AQU11773 - P-loop NTPase

AQU11773 - replication protein  
 YP\_009021245 - CDS  
 YP\_009021245 - replication-associated protein  
 YP\_009021245 - RNA helicase  
 AXH78100 - CDS  
 AXH78100 - helicase Protein  
 AXH78100 - RNA helicase  
 AQU11776 - CDS  
 AQU11776 - P-loop NTPase  
 AQU11776 - replication protein  
 AXH75780 - CDS  
 AXH75780 - replication-associated protein  
 AXH75780 - Viral Rep  
 AIF34818 - CDS  
 AIF34818 - replication-associated protein  
 AIF34818 - Viral Rep  
 AIX11626 - Rep CDS  
 AIX11626 - replicase Protein  
 AIX11626 - RNA helicase  
 AOV86234 - DNA pol3 delta2  
 AOV86234 - CDS  
 AOV86234 - putative rep protein  
 AOV86234 - RNA helicase  
 YP\_009237586 - CDS  
 YP\_009237586 - P-loop NTPase  
 YP\_009237586 - replication associated protein  
 AXH73393 - CDS  
 AXH73393 - putative viral replication protein  
 AXH73393 - RNA helicase  
 AXH76040 - CDS  
 AXH76040 - putative viral replication protein  
 AXH76040 - RNA helicase  
 AVX29443 - CDS  
 AVX29443 - replication initiator protein  
 AVX29443 - RNA helicase  
 AXH73290 - CDS  
 AXH73290 - putative viral replication protein  
 AXH73290 - Viral Rep  
 AXH75585 - CDS  
 AXH75585 - putative viral replication protein  
 AXH75585 - Viral Rep  
 AGS47835 - CDS  
 AGS47835 - P-loop NTPase  
 AGS47835 - replication-associated protein  
 AXH73792 - CDS  
 AXH73792 - putative viral replication protein  
 AXH73792 - Viral Rep  
 AIF34798 - CDS  
 AIF34798 - P-loop NTPase  
 AIF34798 - replication-associated protein  
 AEL22996 - CDS  
 YP\_004778177 - CDS  
 AEL22996 - P-loop NTPase  
 YP\_004778177 - P-loop NTPase  
 AEL22996 - Rep protein  
 YP\_004778177 - Rep protein  
 AJD07493 - CDS

AJD07493 - replication-associated protein  
 AJD07493 - RNA helicase  
 AGA18388 - CDS  
 AGA18388 - hypothetical protein  
 AGA18388 - P-loop NTPase  
 AUW34331 - Rep CDS  
 AUW34331 - replication-associated protein  
 AUW34331 - RNA helicase  
 YP\_009163936 - CDS  
 YP\_009163936 - P-loop NTPase  
 YP\_009163936 - putative replication initiation protein  
 AGA18473 - CDS  
 AGA18473 - hypothetical protein  
 AGA18473 - P-loop NTPase  
 AJM89742 - CDS  
 AJM89742 - P-loop NTPase  
 AJM89742 - replication associated protein  
 YP\_009237516 - CDS  
 YP\_009237516 - replication associated protein  
 YP\_009237516 - RNA helicase  
 AXH77740 - CDS  
 AXH77740 - P-loop NTPase  
 AXH77740 - putative viral replication protein  
 AXH74140 - CDS  
 AXH74140 - helicase Protein  
 AXH74140 - RNA helicase  
 BAP81877 - Rep CDS  
 BAP81877 - RNA helicase  
 BAP81877 - rolling circle replication initiator protein  
 YP\_009109660 - P-loop NTPase  
 YP\_009109660 - replication-associated protein  
 YP\_009109660 - start codon not determined CDS  
 AJD07478 - CDS  
 AJD07478 - replication-associated protein  
 AJD07478 - RNA helicase  
 AXH75674 - CDS  
 AXH75674 - P-loop NTPase  
 AXH75674 - Rep Protein  
 YP\_009109670 - CDS  
 YP\_009109670 - P-loop NTPase  
 YP\_009109670 - replication-associated protein  
 AIF76259 - CDS  
 AIF76259 - Rep Protein  
 AIF76259 - RNA helicase  
 AMD39533 - AAA 16  
 AMD39533 - replication-associated protein  
 AMD39533 - V1 CDS  
 YP\_764455 - AAA 16  
 YP\_764455 - ORFV1; putative replicase CDS  
 YP\_764455 - rep protein  
 AGA19549 - C1 CDS  
 AGA19549 - Gemini AL1  
 AGA19549 - Rep Protein  
 YP\_009458619 - rep CDS  
 YP\_009458619 - replication-association protein  
 YP\_009458619 - RNA helicase